pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

march 1961

CONTROLLED BLASTING

see page 116

Convention Reports —

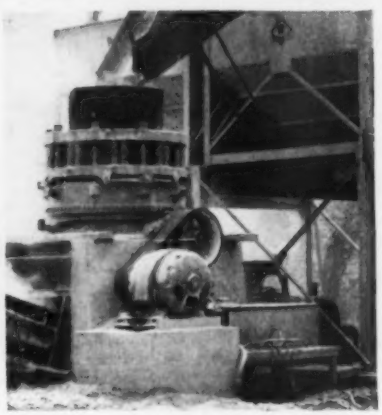
NLI · NCSA · NSGA

MEETS ALL SPECS ...IN A SINGLE PLANT

● Processing hard trap rock, this plant makes all Delaware and Maryland Highway specification sizes, as well as producing all required sizes for general construction. Plant has a cleancut straight line layout and is Telsmith equipped. As designed, the plant has unusual flexibility—a large primary surge pile; 4 stages of crushing; 3 stages of bins and screening: for modified sizes . . . for large sizes . . . and a dual tertiary stage for fine sizes. Designed for a maximum capacity of 2500 tons daily, the plant, near North East, Md., is owned by Maryland Materials, Inc., formed by Petrillo Bros., well known aggregate producers, and James Julian, Inc., prominent contractors of Wilmington, Del.

No. 1 bin with 5′ x 12′ double deck Scalper and 13-B Gyratory Crusher

No. 2 bin with 5′ x 14′ triple deck Vibro-King Screen, 48-S Gyrasphere Crusher



No. 3—two 3-compartment bins with a 48-FC Gyrasphere Crusher

TELSMITH Equipment in this plant—48″ x 16′ heavy duty Apron Feeder • 36″ x 6′ heavy duty Plate Feeder • 5′ x 12′ double deck Scalper • 13-B Gyratory Crusher • 5′ x 14′ triple deck Vibro-King Screen • 48-S Gyrasphere Crusher • two 4′ x 14′ triple deck Vibro-King Screens • 48-FC Gyrasphere Crusher • two 36″ x 72′, 36″ x 132′, 30″ x 130′, 24″ x 126′, 24″ x 74′ Telsmith Barber-Greene conveyors.

Send for Bulletin 266

Q-41-261

SMITH ENGINEERING WORKS
504 E. CAPITOL DRIVE, MILWAUKEE 1, WISCONSIN

DIVISION OF Barber-Greene

Cable Address: Sengworks, Milwaukee • Representatives in Principal Cities in all Parts of the World

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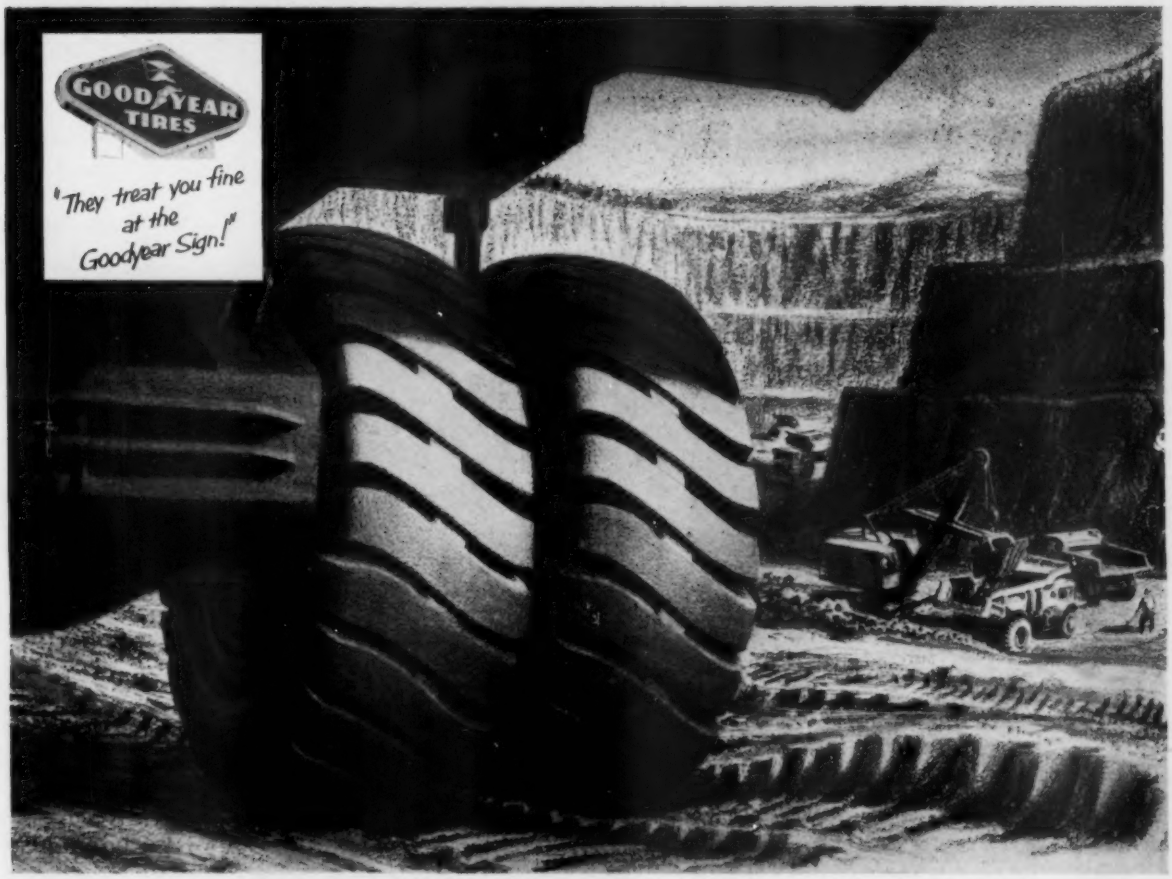


You never had 'em so tough!

HARD ROCK LUG XTRA TRED

Here it is! From Goodyear's advanced technology and processes—

HARD ROCK LUG XTRA TRED—the mine and quarry tire that's built with extra tread to take it where the going's tough!

It's made with 3-T Nylon Cord—triple-tempered by Tension, Temperature and Time—that makes *the world's toughest tire bodies.*

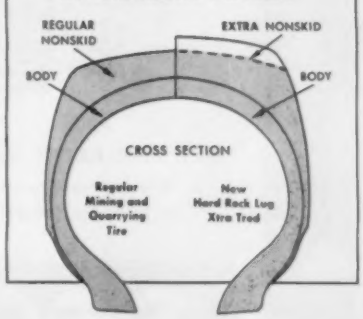
It has specially compounded rubber that embodies remarkable super-toughening agents for far greater chip-, wear- and penetration-resistance—that produces *the world's toughest treads.*

And, with its thicker nonskid tread depth (as much as 71% thicker) for harder-biting, longer-wearing lugs, you take out *more pay loads in less time and at lower cost*—with fewer maintenance headaches, too!

Ask your Goodyear dealer about Hard Rock Lug Xtra Treds, *now.*

Goodyear, Truck Tire Department, Akron 16, Ohio.

MORE AND TOUGHER RUBBER IN THE RIGHT PLACES!



THE WORLD'S TOUGHEST TRUCK TIRES BY

GOODYEAR

Xtra Tred—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

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PIT AND QUARRY, March, 1961, Vol. 53, No. 9. Published monthly by Pit and Quarry Publications, Inc., 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U.S., possessions and Canada. Central and South America $10 for 1 year, elsewhere $15. Single Copy $.50 except $1 for January, May and July. Entered as second class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879. *Postmaster: Please send notices on Form 3578 and copies returned under label Form 3579 to 431 South Dearborn Street, Chicago 5, Ill.*

ACCOMPLISHED:

PEAK OPERATING EFFICIENCY...

AND SECO SCREENS ARE THE VITAL PART OF THE PICTURE

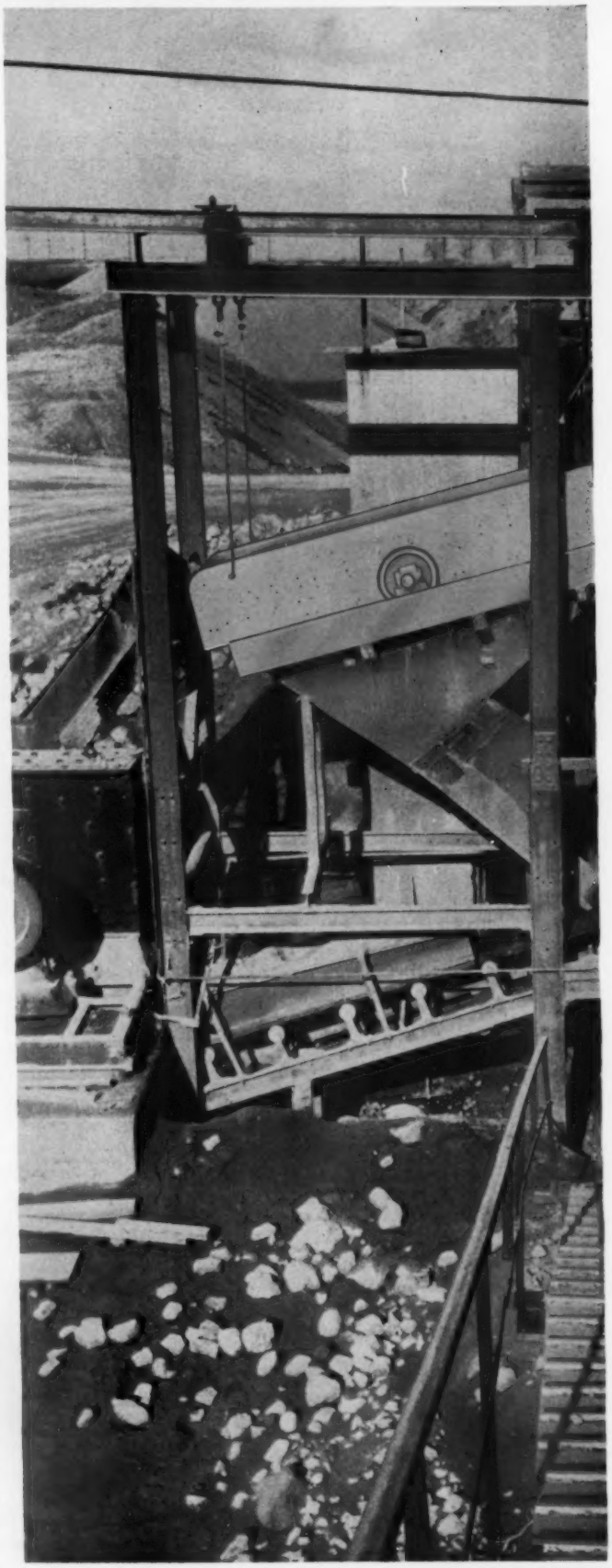
Whenever you come across a rock products plant that's producing top tonnages, and operating smoothly and efficiently, take a look at the screens. Very often, you'll find those screens bear the SECO nameplate. All across the country, you'll find operators turning to SECO when they're adding or replacing screens. And for one very simple reason . . . *they can depend on SECO performance.* Performance in top tonnages when the going gets rough . . . performance in more accurately screened product . . . performance that doesn't let them down. Put your plant in peak operating efficiency . . . and start by building around SECO Screens.

GET THE FACTS NOW!

Send for 4-bearing catalog #205
or TWIN BEARING Booklet TB-21.

SECO
PRODUCER PROVEN
VIBRATING SCREENS

SCREEN EQUIPMENT CO., INC.
Buffalo 25, N. Y.



PIT and QUARRY

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VOL. 53 No. 9

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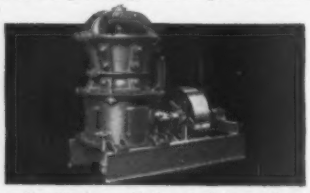
NO MAJOR REPAIRS IN 25 YEARS*

Sturtevant Construction Assures Long Mill Life at Top Loads

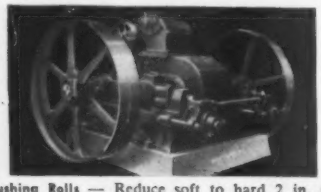
Sturtevant crushing and grinding machinery answers the long life top-load production problem for medium to small size plants. Many Sturtevants have been operating above rated capacities for more than 25 years, and *without a major repair.*

"Open-Door" design gives instant accessibility where needed — makes cleanouts, inspection and maintenance fast and easy. Machines may be set up in units to operate at equal quality and capacity.

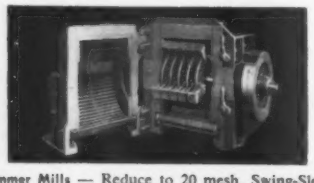
Jaw Crushers — Produce coarse (5 in. largest model) to fine (⅛ in. smallest model). Eight models range from 2 x 6 in. jaw opening (lab model) to 12 x 26 in. Capacities to 30 tph. All except two smallest sizes operate on double cam principle — crush double per energy unit. *Request Bulletin No. 062.*



Rotary Fine Crusher — Reduce soft to medium hard 3 to 8 in. material down to ¼ to 1¼ in. sizes. Capacities up to 30 tph. Smallest model has 6 x 18 in. hopper opening; largest, 10 x 30 in. Non-clogging operation. Single handwheel regulates size. *Request Bulletin No. 063.*



Crushing Rolls — Reduce soft to hard 2 in. and smaller materials to from 12 to 20 mesh with minimum fines. Eight sizes, with rolls from 8 x 5 in. to 38 x 20 in.; rates to 87 tph. Three types — Balanced Rolls; Plain Balanced Rolls; Laboratory Rolls — all may be adjusted in operation. *Request Bulletin No. 065.*



Hammer Mills — Reduce to 20 mesh. Swing-Sledge Mills crush or shred medium hard material up to 70 tph. Hinged-Hammer Pulverizers crush or shred softer material at rates up to 30 tph. Four Swing-Sledge Mills with feed openings from 6 x 5 in. to 20 x 30½ in. Four Hinged-Hammer Pulverizers with feed openings from 12 x 12 in. to 12½ x 24 in. *Request Bulletin No. 084.*

**Reports Manager W. Carleton Merrill concerning Sturtevant Swing-Sledge Mill at James F. Morse Co., Boston.*

STURTEVANT
MILL COMPANY
104 Clayton St., Boston 22, Mass.

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pit and quarry

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Another MARYLAND MATERIALS SUPPLIER banks on the 25-D

TWO Northwest Model 25-D Shovels can throw out a lot of sand. Here is the pit of the Campbell Sand Company at Greenbelt, Maryland. These two rigs keep two sand processing units on the jump.

The 25-D is the workhorse of the ¾ yard field. Northwest *made it* a *real* Rock Shovel. It didn't "just happen". Literally dozens of them in this class of work prove it.

Take a look at it! The solid cast alloy Steel Machinery Bases with Machinery Side Frames cast integrally are massive for a machine of this size. They take the shock of rock digging and eliminate constant rebuilding. The Crowd—different, Dual Independent—an Automatic Crowd plus an Independent Crowd, utilizes force most Independent Crowds waste. Handles the tough digging with greater ease. Makes easy digging easier and gives greater output.

The big Uniform Pressure Swing Clutches let you put *all* the load in the truck. Note there is no spillage in the picture. There is the Feather-Touch Clutch Control that gives the true "feel" of the load in nudging the teeth under a big one or in probing a partly shot ledge of rocks. There is the Cushion Clutch that eliminates the shock overload on operating mechanism, increases cable life, and makes ample power safe.

It's a rock rig through and through with the advantages that assure output—not just for today—but for tomorrow, month after month.

There is lot more to tell you. Details make equipment. Dig into them. A Northwest man is at your service.

S-25-26-5

NORTHWEST ENGINEERING COMPANY
1515 Field Building, 135 South La Salle Street, Chicago 3, Illinois

You can say... "THEY'RE ALWAYS READY TO GO!"

3/4 to 3
Cubic Yard Capacity

NORTHWEST

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS
¾ Yd. to 2½ Yd. Capacity

CRANES
13-Ton to 60-Ton Capacity

DRAGLINES
¾ Yd. to 3 Yd. Capacity

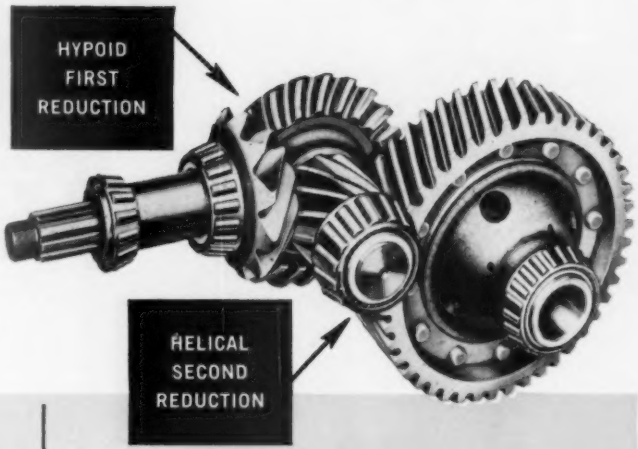
PULLSHOVELS
¾ Yd. to 2½ Yd. Capacity

TRUCK CRANES
25-Ton and 45-Ton Capacity

Heavy-Duty Hauling Jobs Are Easy With Timken-Detroit®

BALANCED HYPOID-HELICAL DOUBLE-REDUCTION AXLES

Timken-Detroit balanced hypoid-helical double-reduction gearing is unequalled for top performance and dependability. Outstanding advantages that make it the choice of heavy-duty equipment manufacturers and operators are: big, husky gears . . . greater flexibility in gear ratios . . . balanced gear set loadings . . . long life and low maintenance costs. The hypoid first reduction is 30% stronger than spiral bevel, and works in series with the second reduction to take an equal share of the load. In the helical second reduction, strong helical gears with a wide range of ratios insure balanced double-reduction gearing.

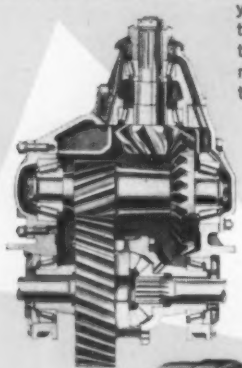


240 SERIES
SINGLE-SPEED, HYPOID-HELICAL DOUBLE-REDUCTION

Two full-sized gear sets form a balanced power train—with each gear set accomplishing a substantial reduction. This combination of husky hypoid first reduction gears coupled with rugged, wide-faced helical second reduction gears provides a double-reduction gear set that outperforms all others. Because the ratios of each reduction may be varied, you get a balanced power train with the larger selection of axle ratios for maximum operational versatility and performance.

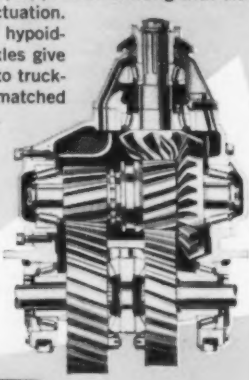
340 SERIES
TWO-SPEED, HYPOID-HELICAL DOUBLE-REDUCTION

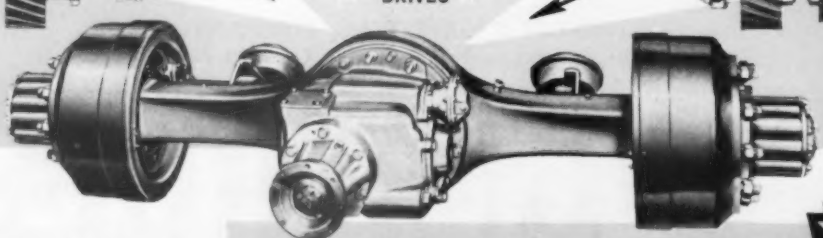
A true two-speed axle which provides two separate gear ratios through the use of two full-size helical gear sets . . . a "fast" ratio for maximum speeds and a "slow" ratio for greatest pulling power. Pick the most efficient gear ratio to meet your requirements of speed, load and road. Spring-flex power shifting provides simple, positive shifting with either air, vacuum or electric actuation. Timken-Detroit two-speed hypoid-helical double-reduction axles give a versatility and economy to trucking operations that is unmatched by other axle gear designs.



choice of two—

INTERCHANGEABLE BALANCED DOUBLE-REDUCTION DRIVES





Another Product of... **ROCKWELL-STANDARD CORPORATION**

ROCKWELL R STANDARD

Transmission and Axle Division, Detroit 32, Michigan

Washed sand and gravel . . . 250 tons per hour profitably produced by

Diamond Stationary Plant

Twin loading hoppers for direct or blend feeding of pit run materials

- **Twin traploading hoppers, each with 24″ x 3′6″ plate feeders**
- **3 Lattice-framed plant belt conveyors (30″ x 140′, 24″ x 94′, 18″ x 50′)**
- **2 4′ x 12′, 3-deck screens, spray-bar equipped**
- **1 28″ water scalping classifying tank with triple collecting flume**
- **2 Screw washers 36″ x 25′**
- **1 Screw washer 20″ x 22′**
- **2 Wash boxes**
- **1 3′ cone crusher**
- **1 10″ x 24″ jaw crusher**
- **6 Stockpiling conveyors (from 18″ x 55′ to 20″ x 80′)**

Diamond Iron Works engineers have helped a new sand and gravel operator design a plant to profitably produce 250 tons of crushed and washed aggregate per hour.

The firm is Parmar Sand, Inc. of Transfer, Pa.

Their Diamond closed circuit plant takes a wide variation of sand and gravel, obtained from two different pits, and turns it into seven basic grades, including both concrete and mason sand.

Parmar's market is broadened further because the close control possible with their Diamond plant assures materials which meet specifications for both highway and commercial construction in two states.

Another advantage of the plant, in addition to being compact and electrically driven, with all wiring underground, is that it requires very little supervision. And it is designed so that future expansion will require minimum alteration to existing facilities.

In summary, this is another example of how Diamond provided a profit package of high capacity, smooth operation, and low cost. We'd welcome the chance to help you—regardless of the size plant you want. See your Diamond Distributor.

DIAMOND IRON WORKS
DIVISION
GOODMAN MANUFACTURING COMPANY
Halsted Street and 48th Place • Chicago 9, Illinois

DIAMOND

Enter 7 on card, page 207

STEPHENS-ADAMSON

CURVE CROWN® BY STEPHENS-ADAMSON

PULLEYS

FEATURING "SQUEEZELOCK" HUB DESIGN

FOR GREATER BELT TRAINING EFFECT... REDUCED BELT WEAR

STURDY RIM CONSTRUCTION

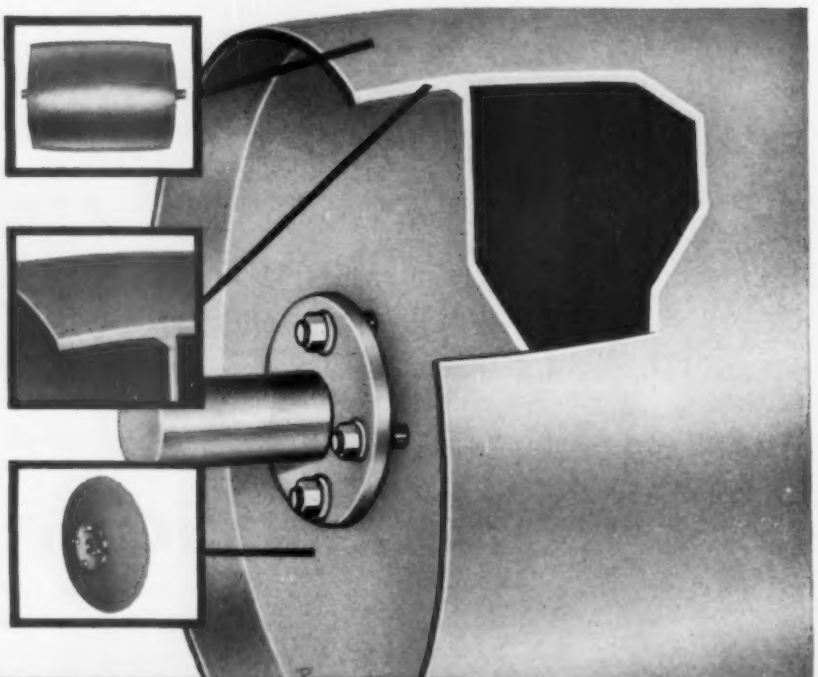
Pulley rims are made of one-piece construction, formed absolutely round under hydrostatic pressure. The only seam is machine-welded both inside and out to insure 100% penetration of welds.

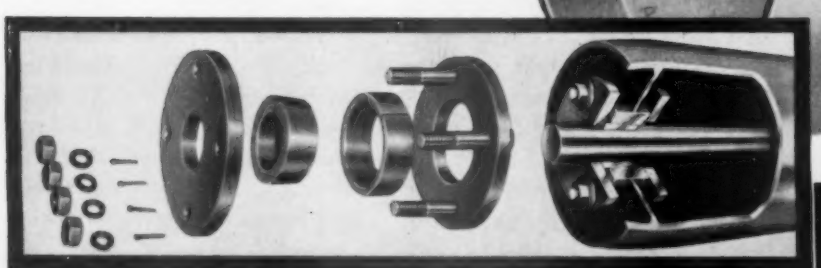
CURVE CROWN® DESIGN

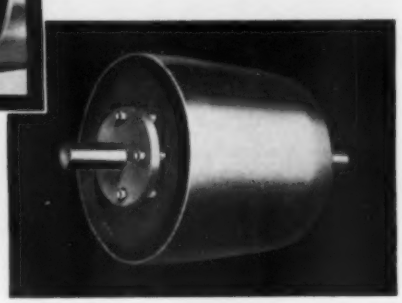
Curve Crown on outer ends of rim accurately formed. Revolutionary design eliminates conventional center peak — high point for belt stretch and wear —while increasing belt training effect more than 100%.

ACCURATE END PLATE ASSEMBLY

End plates are machined on both the O.D. and I.D. to insure concentricity between the bore and the outer rim. They are pressed into position for tight fit-up and submerged arc-welded for maximum efficiency.







"SQUEEZELOCK"® HUB Revolutionary design of "SQUEEZELOCK" Hub provides gripping power for full torque transmission without the use of keyways and eliminates distorting loads against pulley end plates. Two split tapered bushings are wedged against shaft and pulley end plates by two independent hub plates which are squeezed together by tightening four large diameter bolts.

Write for Bulletin 558

S-A

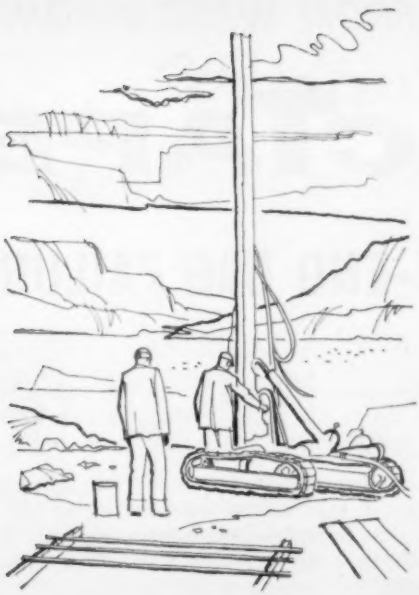
ENGINEERED BULK HANDLING SYSTEMS
MATERIALS HANDLING PRODUCTS
SPEEDWALK PASSENGER CONVEYORS
STALMASTER BALL BEARING UNITS
SPHERCO BEARINGS & ROD ENDS

STANDARD PRODUCTS DIVISION

STEPHENS-ADAMSON MFG. CO.

GENERAL OFFICE & MAIN PLANT, 20 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

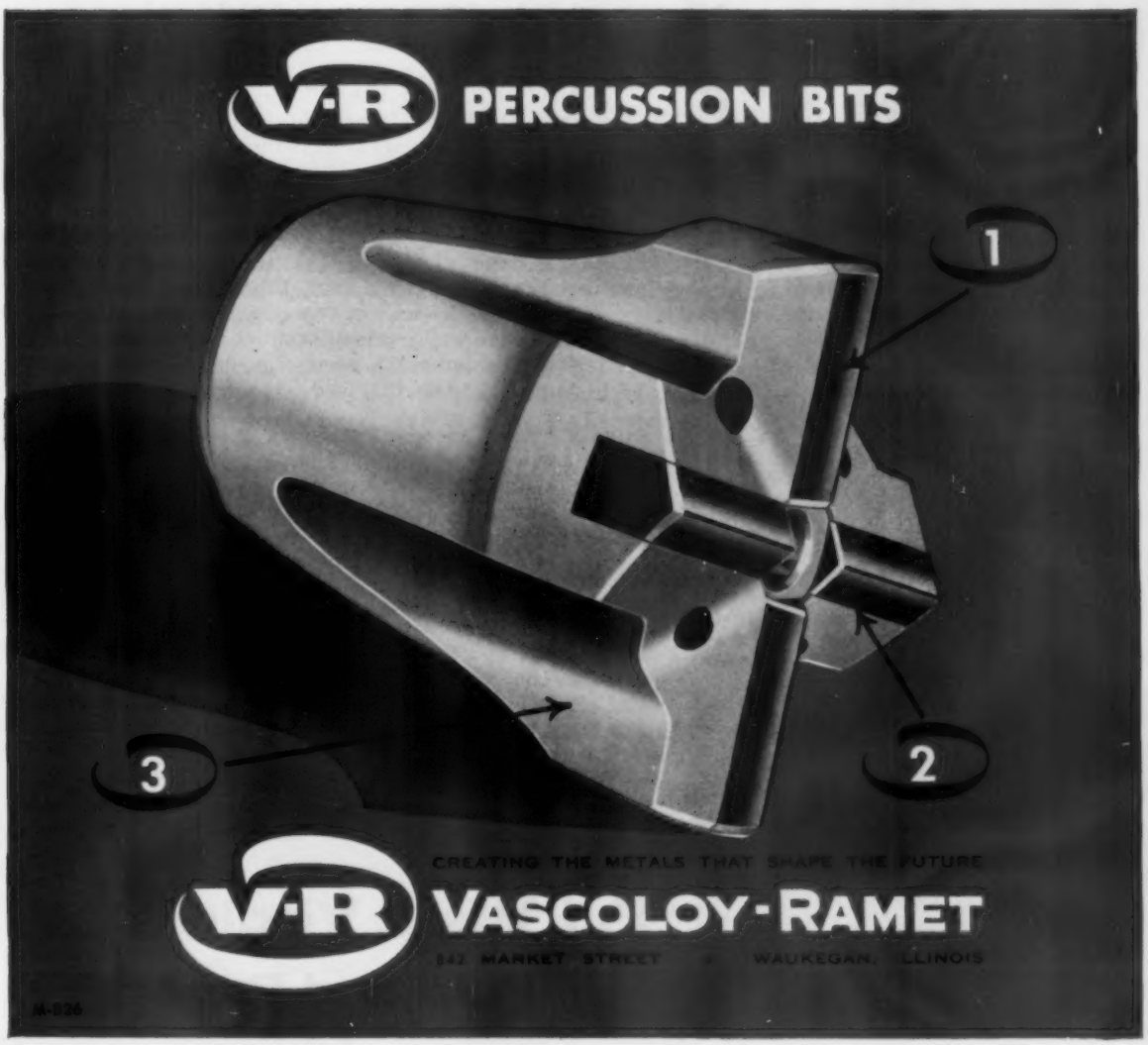


It pays to get your bits from this carbide manufacturer

V-R controls the manufacture of the entire bit —

1. Carbide inserts are quality controlled by V-R from ore to finished product.
2. Bits are brazed and finished by V-R to insure long life.
3. Bit body is made of high-alloy steel with precision threads to exacting V-R specifications.

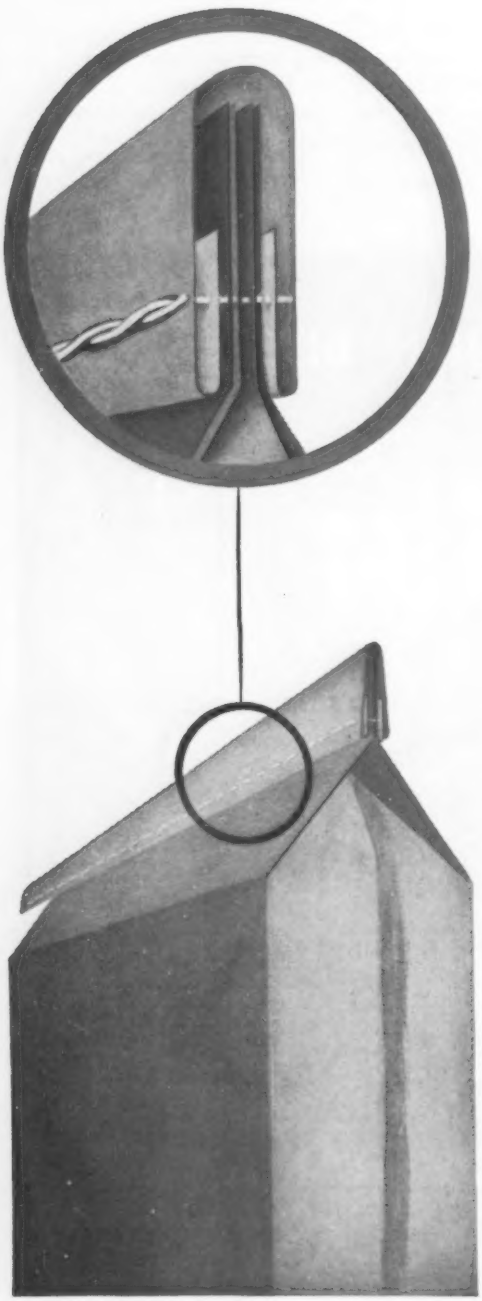
These are reasons you get more clean, smooth, round blast holes with V-R Bits. Write Vascoloy-Ramet today regarding your requirements. Available through Authorized V-R Distributors, V-R Representatives or direct from the factory.



ANOTHER TECHNICAL ADVANCE FROM WEST VIRGINIA

NEW ImpacTAPE™

DRASTICALLY REDUCES SEWN-END BAG FAILURE



Pioneer in the development of Clupak* extensible paper, West Virginia now leads the way to a far stronger, tighter, money-saving sewn multiwall through "ImpacTape."

ImpacTape is a revolutionary new type of sewn tape closure** that adds four layers of tape to the sewn end instead of the conventional two. This provides *49% greater toughness* than standard sewn 70-lb. tape closures plus a new "cushioning" against impact shock.

PROOF from actual field trial

A leading cement company had an unusually high sewn valve breakage rate of 1%. They packed a trial shipment of bags, using West Virginia's new ImpacTape. Average breakage rate went down to .3%—a reduction of 70%. Dollar savings from reduced breakage will far exceed the small upcharge for the new closure.

PROOF from new testing technique

The development of ImpacTape was hastened by West Virginia's successful adoption of the Impact Resistance Tester to measure sewn end toughness under conditions of sudden shock. It represents the only sewn closure test devised thus far which bears a predictable correlation to drop tests and actual field performance.

Studies indicate that 70% of sewn bag breakage ordinarily is at the sewn closure, even on Clupak paper bags, because the sewn closure is the weakest point in the bag. Often this breakage was incorrectly blamed on the paper. Now stronger ImpacTape opens the door to profits from the greater toughness and possible basis weight reductions which Clupak paper is delivering to thousands of users. *This is realistic research achievement —aimed straight at reducing your total packaging costs.*

For a brochure giving detailed information, write and tell us whether you use sewn open mouth or sewn valve bags. Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Ave., New York 17, N. Y.

**Clupak, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications.*

***Patent Pending.*

West Virginia Pulp and Paper

Washington News Letter

By S. HERBERT UNTERBERGER

WASHINGTON is jumping — not necessarily with joy—but jumping nevertheless. Not since the beginning of the Roosevelt Administration has there been so rapid a repudiation of the preceding regime. There are, however, several significant differences in the two situations.

First, when the Roosevelt Administration took office, it was not necessary to convince anyone about the severity of the existing crisis and the need for immediate, even drastic action. Now, no similar crisis, either domestic or international, is nearly so apparent. Indeed, there is some feeling that when the President talks of crisis, he is purposely being overdramatic, in order to be able to mobilize support for his program. What is surprising the old Washington hands most is the fact that, somehow, instead of being shrugged off, the President is being taken seriously by most of the usually cynical press corps and even by many case-hardened members of Congress.

Second, the Roosevelt Administration took office with a clear mandate. There was no doubt that the country had lost faith in the Hoover Administration and that it believed that administration had no further ideas about how to solve the problem of the extraordinarily serious and obviously deepening depression.

The Kennedy Administration had no such clear mandate. There was no clamor for change and no widespread dissatisfaction with the state of the nation's health. Almost any adventitious occurence, such as a snowstorm in Chicago or an improvident remark in a television debate, would have been sufficient to have reversed the Kennedy-Nixon roles. The speed and the ease with which the Eisenhower Administration is being cast in the role of a failure rather than the overwhelming popular success which it actually was amazes Washington observers.

Third, the Roosevelt Administration was largely a series of improvisations. The lights burned late in many a Washington office while the legislation to be introduced in the next day's Congressional session was drafted. At least in the early stages, ideas were rarely tried out on the public before they were presented for Congressional approval and public acceptance.

By way of contrast, before taking office, the technique of publishing the reports of so-called task forces was used repeatedly by the Kennedy forces to test public reaction to a wide range of possible recommendations. Even contradictory recommendations were published to ascertain, among other things, which one would be likely to gain public support most easily. The complete and final form in which requested legislation is presented is startling to Capitol politicos. Rather than being improvised, this legislation at least appears to have been carefully thought through and to have been drafted and redrafted by men skilled in the art of avoiding the legislative and judicical pitfalls into which much of the Roosevelt legislation fell.

However, there is still a very substantial "wait and see" attitude in Washington political circles, where men are anticipating the first battle over a specified piece of legislation, such as that designed to aid depressed areas or to raise the minimum wage. Here the spectators appear to be divided into three camps of shifting size.

There is (1) the growing group of "confidents" who are sure that the contest will be short and victorious; (2) those who are fearful that the power forces are so evenly divided that many of the proposals will be in the line of legislative crossfire from which they will be rescued only by substantial, and even debilitating compromise; and (3) those who are looking for the resolute young man in charge of the executive branch of our government to be checked and balanced—just as the drafters of the Constitution expected—by his more mature colleagues in the legislature and perhaps also the judicial branch.

The proponents of both extreme positions have found solace in the narrowness of the vote by which the composition of the House Rules Committee was changed. Those who are expecting restraints to be imposed by Congress assume that that vote is likely to represent the consistent positions of at least the members of the House of Representatives.

From this assumption they reason that legislative proposals will also have only a relatively small margin to rely on. Any number of circumstances, even absences, could be enough to eliminate this margin. Highly controversial issues, such as tax matters or those involving civil rights, would make the going extremely tough; fear of reprisal from constituents who would be adversely affected would prevent a number of Congressmen from voting for bold action.

Those who are expecting easy sailing draw almost contradictory conclusions from the same event. They see the victory, even by so narrow a margin, as a harbinger of greater victories to come. In support of this position, they point out that many congressmen have made the practice of hiding behind the Rules Committee almost a way of political life. These legislators would assure their constituents who were in favor of a specific piece of legis-

(*Continued on page 73.*)

are you tempted to buy an electrical "pig in a poke"?

If you are considering the installation of screen heating equipment, you will want to investigate all the important factors . . . design, original cost, quality, service . . . before you buy.

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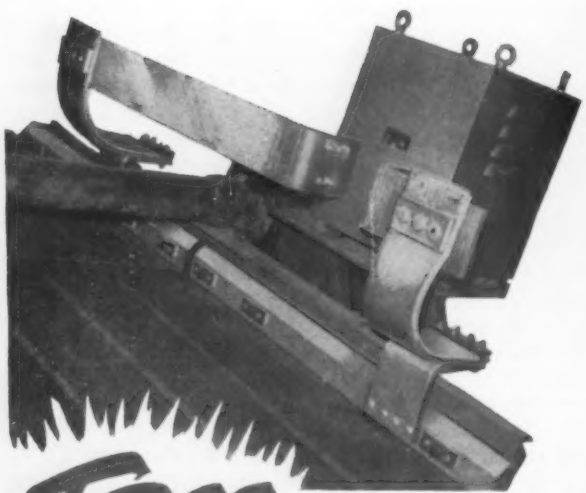

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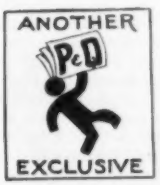
Labor Developments



By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D.C.-Philadelphia, Pa.

WHILE businessmen are finding the new Kennedy Administration much less threatening than they had expected, the labor movement is coming to an opposite conclusion. To the more perceptive leaders it now looks as though organized labor will be required to live through some agonizing readjustments in the next few years.

The causes for this gloomy outlook are not of the Administration's making; they are rooted in far more fundamental economic sources. The principal cause is that the labor movement's major strength is in the manufacturing sector. Except for the building trade unions and the Teamsters, the largest unions are in the steel, automobile, metal working, and rubber industries. Practically all of their membership is composed of the production and maintenance workers in factories.

Of special importance is the fact that, although the output of manufacturing establishments has increased substantially since the end of World War II, the number of such production and maintenance workers has increased hardly at all. It is for this reason, more than any other, that the number of union members has not increased by any significant amount in recent years.

Since the labor force has been growing, the proportion of that labor force which is unionized has, necessarily decreased. The increase in the number of employees has been in other areas — in clerical, technical and sub-professional employment; in employment in the service industries such as hotels, restaurants, and medical services; and in government employment.

Despite this reduction in the relative importance of organized workers, the labor movement has been able to maintain its influence, principally through better organization and representation and through its participation as a political force. Nevertheless, the union leadership realizes that the power of the labor movement has not been growing and that, in the absence of fundamental changes, it is likely to decline.

The largest of the mass production unions, the Automobile Workers, virtually lost their last effort at contract improvements when, after working without a contract for some period of time, they signed up for just about what the companies offered at the outset.

Recently, the Electrical Workers suffered an even worse blow, particularly at the hands of the General Electric Company, when, after starting a strike, a back-to-work movement was led successfully by one faction of the union.

Although the Steelworkers Union presumably won its titanic struggle with the steel companies, it required the Vice President of the United States to use his influence in the union's behalf to effectuate a desired settlement.

Beginning almost immediately, the struggle will resume with the expiration of the automobile industry contracts this spring. Jockeying for position in advance of collective bargaining has already begun. But the union's hope of achieving major gains is very dim, indeed. This is an industry which has already felt the impact of the other major force affecting the basic power of organized labor—namely foreign competition.

Once the industry got moving, it engaged in some rather nimble footwork, thereby managing to win a temporary victory over these forces. The only remaining invader of significance is the German Volkswagen. Having flirted with disaster once, it is unlikely that the automobile industry will take the same chance again.

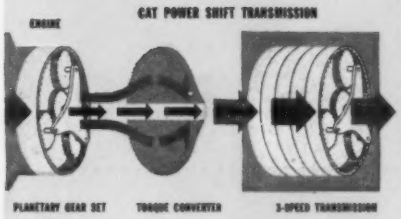
Many other industries, such as textiles, apparel, and bicycles, have not been able to repulse the invasion of imports which are cheaper either because foreign labor costs are lower or the foreign industry is more productive, or both. The net effect is seen in a business decline, areas of unemployment, and therefore depressed areas.

These problems are coming to a head during the Kennedy Administration. The principal responsibility for their solution lies with Arthur Goldberg, the new Secretary of Labor who, for many years, used his not inconsiderable talents in helping unionized workers achieve the very levels of earnings, benefits, and working conditions which are now the source of at least a part of the problem. It is expected that he will use those same talents to solve the problems he now faces. Of concern to his former clients is the fact that if a part of the solution is to be achieved at their expense, he will require them to face up to the responsibility and accept the assessment.

As a matter of fact, the first steps were taken by the outgoing Eisenhower Administration when the former Secretary of Labor, James P. Mitchell, managed to get both the unions and the companies in the railroad industry to agree to participate in a committee, of which he is to be chairman, whose function it will be to study the work rules and recommend necessary changes.

The very fact that the unions agreed to participate indicates that they are prepared to accept some changes in the *status quo*. The debate will not be over whether some so-called "feather-bedding" practices will end, but rather over which

(*Continued on page 74.*)



The exclusive Cat power shift transmission works like this: The engine drives planetary gears in the flywheel, where output torque is divided. Part of it is routed to the transmission through a torque converter (providing anti-stall and load-matching ability). Part goes direct to the three-speed transmission (provides economy and fast response of direct drive). It's one ton of muscle built with the precision of a fine watch.

WITH CAT POWER SHIFT TRANSMISSION IN A D8H, A MAN'S FINGER TIPS CAN CONTROL 30-50% MORE PRODUCTION

Your present equipment may move material at low cost—but here's one reason a D8 Series H Tractor may move it a lot cheaper.

It's the Caterpillar power shift transmission—the only transmission available that combines the advantages of direct drive, torque converter drive and power shifting in a single unit. It greatly increases operator efficiency—offers important new opportunities for broadening your profit margin.

Here's how this big step ahead in transmission design helps your operator get more work from the machine: A single selector lever replaces the familiar master clutch, gear change and forward-reverse levers. Using this single selector lever, the operator can shift on the go in a split-second even under full load. He changes speed or reverses direction with finger-tip ease . . . without clutching . . . without braking . . . without even lifting his arm from the arm rest. And the lever is mounted for left-hand control, leaving the right hand free for maneuvering the tractor or controlling the dozer, ripper or scraper. Convenience makes it easy to choose the right speed at the right moment.

Matching this ease of control are safety features you'll like. A safety lock in the selector housing holds a parked machine in neutral while the engine is running. Another safety device automatically shifts the selector lever to neutral when the engine is stopped.

The simplicity and safety of the Cat power shift transmission make your good operators even better and less experienced operators more effective. They can take greater advantage of the tractor's power and capacity to speed the work. And ease of operation keeps their efficiency high throughout the day.

Cat power shift transmission also means a big jump in your machine's efficiency too. You'll particularly notice the difference on jobs where frequent shifting is the rule—such applications as feeding a shovel or short-cycle dozing.

For instance, in dozing, the operator starts to pick up the load in second gear—then shifts on the go to first for full lug yardage. There's no clutching, no lost time or momentum when changing speeds. An easy move back to second drifts the material to its destination. Another move of the lever puts the machine in high-speed reverse for fast return to the digging area.

Machine efficiency is *always* high. Cat power shift transmission provides the needed power at the highest possible speed. Its exclusive torque divider design combines the snap and economy of direct drive with the load-matching ability and anti-stall characteristics of torque converter drive—and three forward-reverse speeds tailor it to the entire working range.

Just how much of an increase will the Cat power shift transmission make on your job? This will depend on your application. On short-cycle dozing, reports in our file show increases *as high as 50%* over similar-sized machines with other transmissions. Some users flatly state they will never buy another track-type machine in the 200 HP class unless it is a Cat power shift unit.

Power shift transmission is just one reason the D8H may be a far better profit tool than the machine you are now using. There are other features of this 235 HP turbocharged tractor that could be equally advantageous in your work. Your Caterpillar Dealer will welcome the opportunity to discuss the D8H in terms of your job and present facts and figures so you can determine true benefits. And if a demonstration with measured results would help, he will be glad to make arrangements.

Call him today.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

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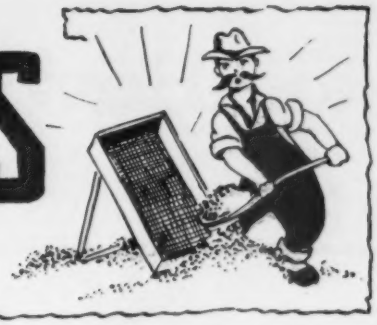
STEP UP PRODUCTION AND PROFITS WITH POWER SHIFT TRANSMISSION

SCREENINGS



By RAY L. SMITH JR.

WITH ALL the new-fangled gadgets designed to capture the imagination and the mind, people in the finance world are making it tougher to spend a buck.

If you don't believe this, gentle reader, ponder the facts.

A high-flying Irish Flag ($1.00) is worth in the beginning only about fifty cents. Uncle Sam gets 20 per cent of its gross value, leaving you with a paltry thirty cents.

Your bank cuts out a dime for the check you write, slicing the net value to twenty cents.

And then the merchandisers get in on the act.

Some places, God forbid, are clipping their customers ten cents to cash a check.

This, if the cause of mathematics is properly served, leaves you holding the bag with a thin ten-cent piece with which to purchase a dollar item.

To top it all, the government is wondering why people are refusing to buy.

A Grim Tale

IT WAS ONE of those evenings: fun time.

Liquid cheer poured plentiful.

A girl, a man, a bartender saw the hog-choking wad of long green, $2,000.

One of three—or someone else—with capitalistic tendencies had ideas, too.

There was another drink, a short trip to dreamsville, a rude awakening. The two Gs were long gone. For someone it had been a profitable rendezvous.

Accusations on behalf of the man with parted coin started the rumble.

The victim parted one gentleman's hair with a chair before a fist turned out the lights.

It was just one of those things, the gendarmes supposed. It could happen to anyone. A pesky domestic problem.

Management was sore, too. Such as this could give a feller a bad name.

A light-of-finger character had surely slipped Mr. light-of-pocket a class A mickey finn, a sleeping potion good for 40 winks.

Like we said, a grim tale. $2,000 true . . . intrigue . . . hanky panky.

Potpourri and Succotash

Printed on a church bulletin: "We believe that the task ahead of us is never as great as the power behind us."

A girl turned up at work one day wearing two officer's silver bars pinned to her sweater.

One of her office mates asked, "Is your boyfriend a captain?"

"Goodness, no," was the answer. "Two lieutenants."

The elderly man lying in the deck chair had long looked forward to a quiet vacation aboard ship. Instead, his deck chair contemplation was constantly interrupted by the unending prattle of a small child whose mother sat nearby. Finally he turned to the woman with a patient smile.

"What do you call this sweet child, madam?" he asked.

"Mary," replied the proud parent.

"Then," snapped the gentleman, "please call her!"

The golf pro was explaining the rules of the game to a young girl who had never played before.

"The idea," said the instructor, "is to try to sink the ball into that hole."

"Oh, that sounds like fun," cried the girl. "And who's supposed to stop me?"

"Doctor," began the garrulous patient, "I really don't know how to describe this new pain to you. It is not similar to anything I've ever had before. Remember the last time I was here, how my back ached every time I walked? Well now, the moment I set foot out of bed every muscle seems to . . . "

The doctor was a busy man. "Let me see your tongue," he said. The lady dutifully stuck out her tongue.

"Fine," he said briskly, as he started his examination. "Now just keep it there."

Here is an exact report of a conversation conducted by a reader of *Theatre Arts* magazine and a telephone operator.

The reader dialed information and asked for the number of the magazine.

"Sorry," said the operator, "but there is nobody listed by the name of Theodore Arts."

"I want Theatre Arts," insisted the reader.

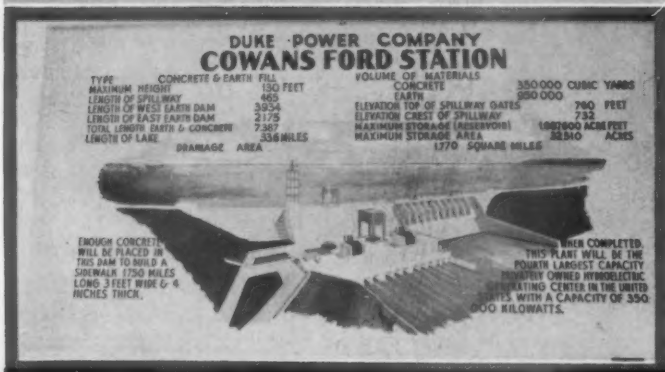
The operator's voice rose, "I told you we have no listing for Theodore Arts."

"Listen," said the reader. "The word is Theatre, T-h-e-a-t-r-e."

"That" said the operator, "is not the way to spell Theodore."

← Enter 14 on card, page 207

How to drown a valley—


DUKE POWER COMPANY
COWANS FORD STATION
TYPE CONCRETE & EARTH FILL
MAXIMUM HEIGHT 130 FEET
LENGTH OF SPILLWAY 465
LENGTH OF WEST EARTH DAM 3934
LENGTH OF EAST EARTH DAM 2175
TOTAL LENGTH EARTH & CONCRETE 7387
LENGTH OF LAKE 336 MILES
VOLUME OF MATERIALS
CONCRETE 350 000 CUBIC YARDS
EARTH 250 000
ELEVATION TOP OF SPILLWAY GATES 760 FEET
ELEVATION CREST OF SPILLWAY 732
MAXIMUM STORAGE (RESERVOIR) 1 007 000 ACRE FEET
MAXIMUM STORAGE AREA 32 510 ACRES
DRAINAGE AREA 1770 SQUARE MILES
ENOUGH CONCRETE WILL BE PLACED IN THIS DAM TO BUILD A SIDEWALK 1750 MILES LONG 3 FEET WIDE & 4 INCHES THICK.
WHEN COMPLETED, THIS PLANT WILL BE THE FOURTH LARGEST CAPACITY PRIVATELY OWNED HYDROELECTRIC GENERATING CENTER IN THE UNITED STATES WITH A CAPACITY OF 350 000 KILOWATTS.

DUKE POWER COMPANY'S CEDARAPIDS PLANT

- 42" x 48" Single Jaw Crusher Primary
- 5' x 12' Inclined Scalping Screen
- 4¼' Symons® Standard Cone Crusher
- 4' Symons® Short Head Cone Crusher
- Two 5' x 14' Horizontal Vibrating Screens
- One 4' x 12' Horizontal Vibrating Screen
- One 5' x 12' Horizontal Vibrating Screen
- 40" x 16'6" Heavy-Duty Model CSF Feeder
- 13 "Strigid" Lattice Frame Conveyors

(Symons—a registered Nordberg trademark)

—with Cedarapids production

300 TONS PER HOUR of 100% crushed aggregate! That's the way to get a dam job finished in a hurry . . . and that's exactly what Duke Power Company is doing with this cleanly-engineered Cedarapids Stationary Plant. The job is the Cowans Ford hydroelectric project, 22 miles northwest of Charlotte, North Carolina, on the Catawba River. Duke Power Company is supplying its own needs for strict specification aggregate. Crushing 90% granite and 10% diorite, with the 42" x 48" jaw crusher set at a 6" opening, they are producing four sizes . . . −6" plus 3"; −3" plus 1½"; −1½" plus ¾"; and −¾" plus #4.

A different dam job, or a highway job, or any other job requiring aggregate, demands an entirely different crushing plant set-up . . . and that's where you profit with a Cedarapids-Engineered Plant. Cedarapids-Engineering means a plant tailor-made for *your* specific conditions, with each component production-balanced with all the others to assure highest capacity at lowest cost per ton. Your near-by Cedarapids Dealer can explain the advantages of Cedarapids-Engineering, or write direct to:

IOWA MANUFACTURING COMPANY
CEDAR RAPIDS, IOWA

Here is the pace-setter for Duke Power's big project. It's the Cedarapids 42" x 48" Single-Jaw Primary Crusher which is engineered with the greatest combination of high-capacity features ever built into a jaw crusher! If you need higher primary capacity, ask for more information.

How to get a
CEDARAPIDS-ENGINEERED
STATIONARY PLANT
that's "tailored" to your job

NAME _____
COMPANY _____
ADDRESS _____
CITY & STATE _____

Gentlemen: Please send details about Cedarapids-Engineering assistance for my stationary plant operations.

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JOHN DEERE
720

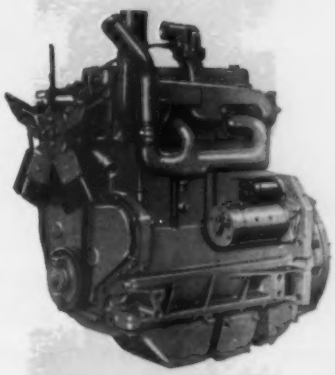
Get set for higher profits—lower bids with new high-production

3010 Wheel Power

Now—cut the big jobs down to size with an all new 65 engine horsepower John Deere "3010." Move into tough loading and material handling assignments with this smooth-handling wheel loader; tackle major trenching jobs confidently with a "3010"-powered John Deere backhoe.

New Operating Ease: Convenient controls boost productivity of the heavy-duty "3010" Wheel Loader and power-matched backhoes. Single-lever control operates loader lift arms and bucket for rapid handling.

John Deere backhoes operate with simple two-lever control. Flush-digging model 51 has rotary boom cylinder which centers or slides to any of four off-center positions, moved by the unit's own hydraulic power.



Gasoline or Diesel Power: All-new John Deere 4-cylinder, 4-cycle overhead valve engines feature cam-ground aluminum pistons, high-turbulence combustion chambers for thorough fuel-air mixing, top efficiency. Replaceable-sleeve design for easy servicing. Large manifold insures free breathing at every speed. Exclusive forced engine ventilation. Full-pressure lubrication system with full-flow oil filter. Exhaust-valve rotators.

Modern Platform, Control Design: Clean, functional "command post" assures all-day operator comfort and efficiency. Deluxe seat adjusts to operator's weight. Large clear platform makes mounting, getting down, fast and easy. Hydraulic controls conveniently located for smooth operation. Constant mesh transmission—8 speeds forward and 3 reverse, for any power requirement. Power steering, power brakes. Low-profile design provides high machine stability, excellent operator vision.

For a demonstration of new John Deere "3010" Wheel Power, contact your John Deere Dealer through the yellow pages of your telephone directory.

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JOHN DEERE LOADERS BULLDOZERS BACKHOES AND EARTHMOVING EQUIPMENT

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More work out of trucks ...at Lower Cost?

EATON 2-SPEED AXLES WILL DO IT!

On-the-job performance records prove that trucks equipped with Eaton 2-Speed Axles make quicker trips, travel more miles at lower cost per mile. By providing *double* the conventional number of gear ratios—the right gear ratio for every road and load—they reduce stress and wear on engine and power transmitting parts; permit engines to run efficiently under all operating conditions.

Eaton's exclusive features, including forced-flow lubrication, planetary gearing, and Inductalloy Axle Shafts, add thousands of miles to axle life, and eliminate costly maintenance expense worries.

Ask your dealer to explain how Eaton 2-Speed Axles reduce hauling costs, add to profits, and make trucks worth more on the trade-in.

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More than 2 Million Eaton Axles in Trucks Today

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BOSTRON

THE BELT WITH THE HAZARD-PROOF CARCASS!

WILL NOT ROT OR MILDEW — Constantly running salt water cannot rot or mildew 2-ply BOSTRON belt at J. H. Miles Co., Norfolk, Va. No deterioriation from fastener rust, no fastener holding problems.

OUTSTANDING WEAR — Constant impact and friction from razor-sharp oyster shells has not affected the 1/8" Dulon Cover on this BOSTRON belt. Says Mr. Frank M. Miles, President, "Our BOSTRON belt is good as new after 4 years operation . . . Exceeded every expectation!"

BOSTRON'S hazard-proof carcass, combined with Balanced Belt Construction, makes your investment in a superior Dulon Cover the most sensible, dollar-saving way to buy belts for your requirements.

An exclusive research milestone by

BOSTON
SINCE 1880

AMERICAN BILTRITE RUBBER COMPANY
BOSTON WOVEN HOSE & RUBBER DIVISION
BOSTON 3, MASSACHUSETTS

AMERICAN BILTRITE RUBBER COMPANY PQ
BOSTON WOVEN HOSE & RUBBER DIVISION
Boston 3, Massachusetts

Please send free illustrated literature about the new hazard-proof BostRon Belts.

Company Name _____
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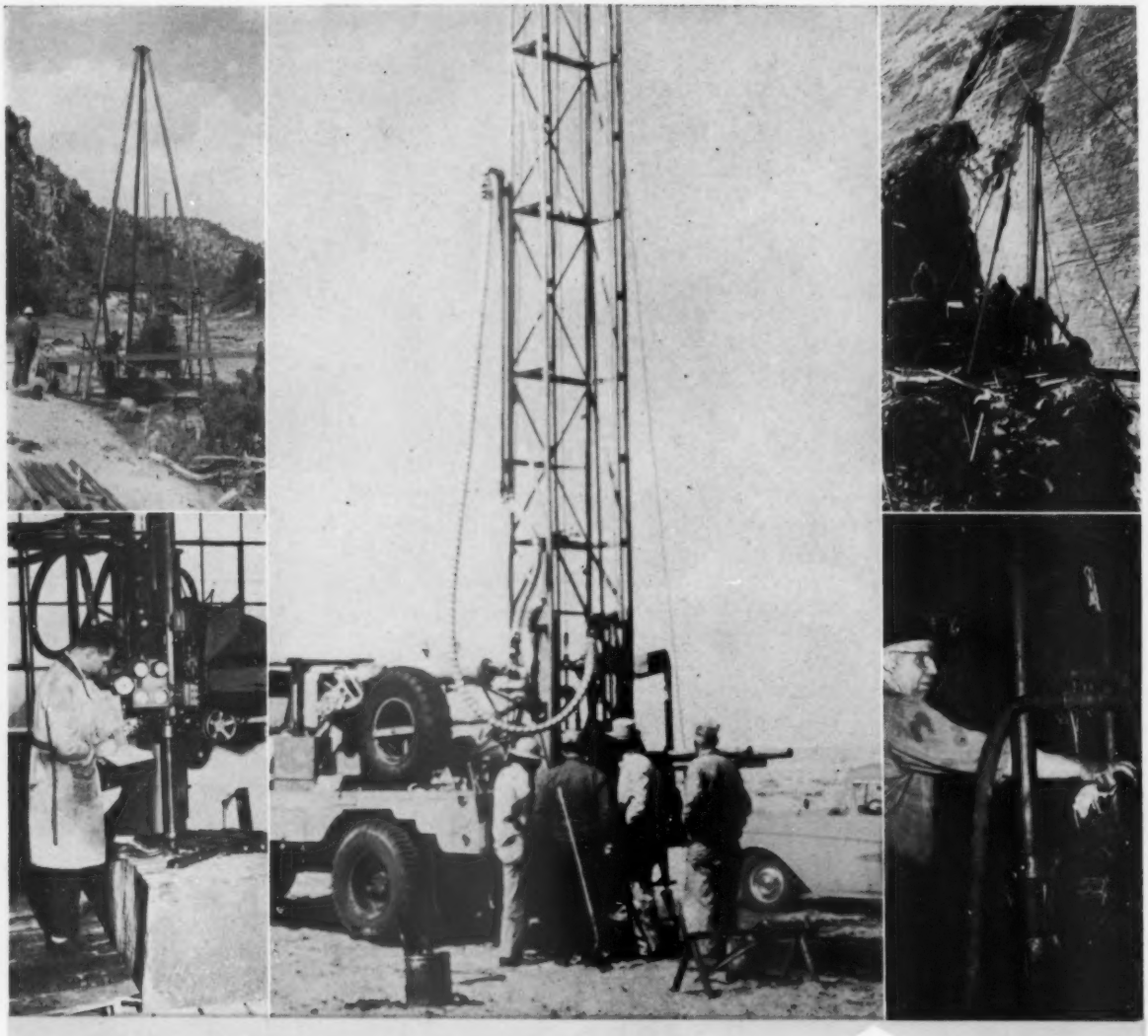


Operate at "Less cost per foot" . . .

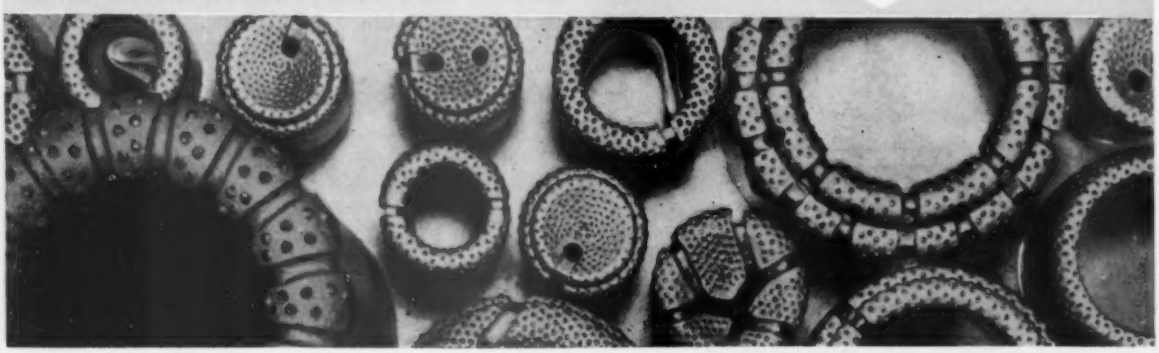
. . . with Christensen diamond bits and core barrels "engineered" for your particular drilling problem. Experienced field consultants are available regardless of your job location or scope of operations.

"Less cost per foot"

CHRISTENSEN DIAMOND PRODUCTS

MAIN OFFICE AND PLANT 1937 SOUTH 2nd WEST
SALT LAKE CITY, UTAH

SERVICE FROM WORLD-WIDE SALES OFFICES AND MANUFACTURING PLANTS



News of the Industry

Houdaille Gives Assist To Expansion Problem Of Montclair State College

One of the largest excavation projects ever undertaken in New Jersey for building construction recently got under way in Montclair. The project demonstrates accomplishments possible, through government and business teamwork, in meeting essential educational and community needs.

Involved in the project is the removal of a 50-ft. high exposure of traprock that juts up behind existing college buildings near the campus of Montclair State College. Since the college is bordered on two sides by residential and commercial buildings, on the third side by the steeply rising traprock exposure, and on the remaining side by the quarry of Houdaille Construction Materials, Inc., university officials were faced with the tough problem of how to accomplish an urgently needed expansion of the campus.

College officials concluded that the only possible expansion lay in the direction of the traprock exposure and the quarry. Officials of Houdaille not only welcomed the opportunity to study the project, but also volunteered to contribute quarried-out land adjoining the college. The firm has contracted with the state to these ends, and leveling of the traprock began early in February.

Since blasting and excavating will be conducted only a few feet away from some of the college buildings, Houdaille has completed an extensive and detailed seismological study. Dr. Don Leet, a nationally known seismological and geological consultant, and a member of the Harvard University faculty, has been retained by the firm.

Besides the need for protecting surface structures, another problem involved in the project was the use of appropriate excavation techniques to assure the safety of numerous transportation and utility facilities on, under, over, and alongside both college and quarry properties. These include railroad tracks, high-power electrical transmission lines, a 30-in. gas main, and two 6-ft. water mains.

This sketch shows the traprock mass to be removed to make room for the expansion of the Montclair College campus.

The entire project is practical because the land involved is rich with a basic material needed for the accelerated construction programs throughout metropolitan New Jersey. Houdaille's compensation for its part in the project will be the right to extract nearly 3,000,000 tons of traprock for use in area construction; the state will pay no money for the land—nearly 40 acres—that the college will gain. The only money involved is a fee of one dollar for land exchange.

Coming Events

April 18-20, 1961—Detroit. Third annual Cement Industry Sub-Committee technical conference, The American Institute of Electrical Engineers. Sheraton-Cadillac Hotel.

April 24-25, 1961 — Las Vegas, Nev. Southwest Minerals Conference and national meeting, Industrial Minerals Section of Society of Mining Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers. Stardust Hotel.

April 27-28, 1961 — Cleveland. Annual meeting, National Slag Association. Sheraton-Cleveland Hotel.

May 11-13, 1961—Point Clear, Ala. Annual convention, National Lime Association. Grand Hotel.

June 12-13, 1961 — Chicago. Mid-year meetings of divisional boards and committees, National Limestone Institute, Inc. Sheraton-Blackstone Hotel.

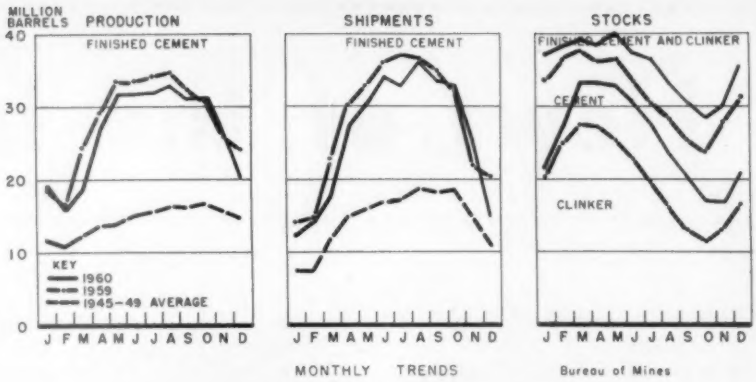
Construction Put in Place During Month of January Keeps Year-Ago Pace

The value of new construction put in place in January, 1961, amounted to $3.8 billion, according to preliminary estimates of the U. S. Department of Commerce. This amount was 15 percent less than in December, 1960 (slightly more than a normal seasonal decline of about 13 percent between months), but approximately the same as in January, 1960.

Preliminary estimates (which were announced last month) for expenditures during the calendar year 1960 have been revised slightly, as follows: total new construction—$55.17 billion (last month's estimate, $55.2 billion); total private construction—$38.93 billion (from $39 billion); and public construction — $16.24 billion (from $16.1 billion).

ITEM: Private construction, estimated at $2.8 billion, was 12 percent less than expenditures in December, 1960, and 4 percent less than in January, 1960.

ITEM: Public construction, estimated at $1.1 billion, decreased by 20 percent from December, 1960 —the normal seasonal decline is about 17 percent—but rose 15 percent above the level of expenditures in January, 1960.



—December 1960, Finished Portland Cement, and Preliminary Summary for 1960—

■ DECEMBER SUMMARY—Production of finished portland cement in December, 1960, as reported to the U.S. Bureau of Mines, totaled 20,505,000 barrels—a decrease of 15 percent compared with December, 1959. Mill shipments totaled 14,977,000 barrels—a decrease of 26 percent compared with December, 1959. Stocks of 35,484,000 barrels of finished portland cement on hand were 13 percent more than those on hand December 31, 1959. Clinker production during December, 1960, totaled 24,733,000 barrels—a decrease of 10 percent compared with December, 1959.

►PRODUCTION—One hundred and sixty four plants in 39 states and Puerto Rico reported a production of 20,505,000 barrels during December, 1960, compared with 24,111,000 barrels in December, 1959.

Production of clinker was 24,733,000 barrels, compared with 27,390,000 barrels during the same month last year.

High-early-strength portland cement totaled 1,411,000 barrels—a decrease of 13 percent compared with December, 1959.

Prepared masonry cement production of 822,000 barrels decreased 37 percent from the December, 1959, production.

►SHIPMENTS—Mill shipments of finished portland cement from one hundred and seventy six plants totaled 14,977,000 barrels, compared with 20,328,000 barrels in December, 1959.

Shipments were higher in 1 district and lower in 22 districts. The higher shipments in the Oregon-Washington-Hawaii district were due to the addition of the Hawaii plants in 1960.

Shipments of high-early-strength portland cement totaled 891,000 barrels—a decrease of 25 percent from the 1,190,000 barrels shipped in December, 1959.

Shipments of prepared masonry cement totaled 611,000 barrels—a decrease of 48 percent from the 1,169,000 barrels shipped in December, 1959. Prepared masonry cements are shown in 376-lb. barrels although they are sold in barrels of varying weights.

►STOCKS—Mill stocks of 35,484,000 barrels of finished portland cement were on hand December 31, 1960—an increase of 13 percent over the 31,328,000 barrels on hand December 31, 1959. Stocks of clinker on hand December 31, 1960, totaled 20,288,000 barrels—an increase of 27 percent over the 16,506,000 barrels on hand December 31, 1959.

■ PRELIMINARY 1960 SUMMARY—As reported to the U.S. Bureau of Mines, production of portland cement decreased 6 percent in 1960 from the 1959 figures; shipments dropped 7 percent. Production in 1960 totaled 319,010,000 barrels, as compared with 338,535,000 barrels in 1959. Shipments in 1960 totaled 312,138,000 barrels, as compared with 335,052,000 barrels in 1959.

(Note: shipment figures for December and 1959 do not include finished cement used in the manufacture of prepared masonry cement as follows: December, 1959—249,000 barrels; January-December, 1959—2,914,000 barrels; December, 1960—139,000 barrels; January-December, 1960—2,741,000 barrels.) ●

S-G Concrete Firms Merge To Expand Product Line

One of the oldest and one of the newest firms in Pueblo, Colo., have merged: Fountain Sand & Gravel Company and Bullen Concrete Products Company have become one firm, the latter now a division of the former. Fountain Sand and its predecessor companies have been in business under the management of the Bullen family since 1884.

Bullen Concrete, formed in 1958 to produce concrete pipe, expanded its operations to include other precast products such as wall panels. It is now moving into the field of prestressed beams, and will soon make exposed aggregate panels.

Fountain Sand, organized in 1913, recently entered the ready-mix business. Management expects the new combined firm's prestressed operations to reach a gross sales volume in the multimillion-dollar range in three years. It is owned by Joseph A. Bullen and his two sons, Joseph Jr. and Frederick.

The Skyline Crushed Stone Company (located near Front Royal, Va.) is now producing limestone and dolomite for road aggregate.

The cement mill at Aleppo, Syria, jointly erected by the German Democratic Republic and Czechoslovakia, has started producing.

The mid-year meetings of the board and committee of the National Limestone Institute, Inc., will be held June 12 and 13, 1961, at the Sheraton-Blackstone Hotel in Chicago, Ill.

Brilliant Business Career Of Edwin H. Davis Ended by Death

Edwin H. Davis, 72, chairman of the board, general counsel, and treasurer of Davon Inc., Columbus, Ohio, died unexpectedly in December in a Columbus hospital following a heart attack earlier in his home. He had been associated with the company and its subsidiary companies for 53 years, and was a former director and treasurer of the National Coal Association.

Davon Inc. (formerly New York Coal Company) is a construction materials firm, producing sand and gravel, ready-mix, concrete products, crushed stone, and agricultural limestone. It has eight plants and four divisions, serving the entire state of Ohio.

In 1957 Mr. Davis was honored by other officials of his firm with a plaque commemorating his 50 years with the firm. Another surprise had been planned by Davon officials: this summer an 88-acre tract of land is to be dedicated as the Edwin H. Davis State Park. This surprise was inadvertently but fortunately revealed to Mr. Davis just five days before his death. A limestone monument will be dedicated along with the park.

Among Mr. Davis' many business affiliations was membership in the Ohio Chamber of Commerce, The Portland Cement Association, Ohio Forestry Association, Structural Clay Products Institute, and the American Institute of Mining and Metallurgical Engineers. He was past-president and general counsel of these Davon subsidiary companies: New York Coal Sales Co., Columbus, Ohio; New York Coal Co., Columbus; Superior Cement Corp., Portsmouth, Ohio; Southern Ohio Quarries Co., Peebles, Ohio; and several other firms.

Photo: Chase Ltd.

Edwin H. Davis

Oregon Takes Action To Protect Aggregates As Construction Booms

Oregon has a double-edged problem concerning sand and gravel. The steadily increasing use of the materials in urban construction (which caused an estimated 15.5 million tons of sand and gravel to be produced in the state during 1960), coupled with the rapid spread of urban areas over these deposits, led the State Department of Geology and Mineral Industries to begin a long-range study of the Willamette Valley in 1960.

Factors such as sources of new material, rate of use, production costs, quantities available, and depletion rates of sources presently operated will be included in the study. The survey will map the location of potential sources of supply and outline some of the essential economic elements. It will permit the Valley Planning Commission to protect the deposits and urban areas from each other, since neither can exist alone.

1961 Solite Awards Made To Students of Architecture

Solite Corporation, Richmond, Va., has announced its 1961 awards to architectural students. The winners are three seniors at Virginia Polytechnic Institute, Blacksburg, Va., who received cash prizes totaling $750.

The contest is sponsored annually by the lightweight aggregate producer, and is open only to senior students of architecture. It is primarily intended to encourage fresh architectural design with particular emphasis on the use of lightweight structural concrete and masonry units. A similar competition is held at the University of Virginia in Charlottesville.

1960 Is Safest Year In Lambert Bros. History

Lambert Bros. Division (Vulcan Materials Company), Knoxville, Tenn., recently held its annual safety meeting, at which awards were presented to 17 quarry and plant superintendents for an unprecedented safety record in 1960.

Operating under a new safety program which was initiated by the company only last year, personnel at the 17 plants worked 365 days without a lost-time accident. It was the safest year in Lambert Bros. history.

As compared with an over-all lost-time accident rate of 35 in 1959, the firm's 26 plants in Tennessee, West Virginia, Kentucky, and North Carolina had only 17 lost time accidents last year. Individual employees share in the benefits of the safety program by receiving bonus checks and plant awards for perfect records. There are more than 625 employees involved in the firm's operations.

Lambert has launched another special program—preventive maintenance for heavy equipment. It is designed to reduce the lost-time accident rate even more through periodic checking and repairing.

Western Rock Products Inc. recently purchased Marble-Wite Dolomite Inc. and will enter the terrazzo and fines markets. All assets and liabilities of Marble-Wite will be assumed by Western Products. The new business office will be at 6891 Brockton Avenue, Riverside, Calif.

Eastern Lime Corporation, Kutztown, Pa., reports that shipments of high-calcium limestone during 1960 totaled 391,594 tons, compared with 371,718 in 1959. Commercial stone shipments during the year amounted to 307,243 tons, as compared with 323,637 in 1959. Net sales and earning were at an all time high: $1,541,408 and $379,493 respectively.

"We are making 6B State Material with our Eagle Log Washer . . . up to 90 Tons per Hour!"

"10% Objectionable Material Content
Reduced to Less Than 1½%,"
Says John Post Jr., John Post & Sons Co., Durand, Mich.

Many aggregate producers have found that the most economical, or often the only way to satisfactorily wash gravel or crushed rock is with an Eagle Double Log Washer, especially when tough insoluble clays or conglomerates are present—or any material too difficult to break up properly in an Eagle Screw Washer.

The corrugated paddles of the Eagle Log Washer scour and abrade the material so that clay balls are broken down. The current of wash water rising from the bottom of the tub picks up the deleterious material removed by the scrubbing and floats it out of the tub. Clean, sound material is left.

The Eagle Log Washer at the plant of John Post & Sons Co. is efficiently and economically washing their gravel so that it meets specifications covering Michigan State Highway Dept. 6B Material.

If insoluble clay in your deposit is giving you trouble check up on the Eagle Log Washer. Let us put a sample of your material through our Test Lab—know for sure what can be done. Write for details. Ask for a copy of Catalog 61 too!

SINCE 1872

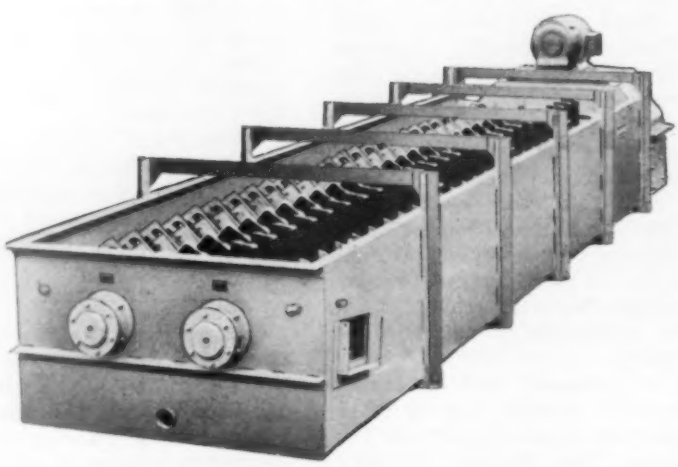
EAGLE IRON WORKS

133 HOLCOMB AVE., DES MOINES, IOWA

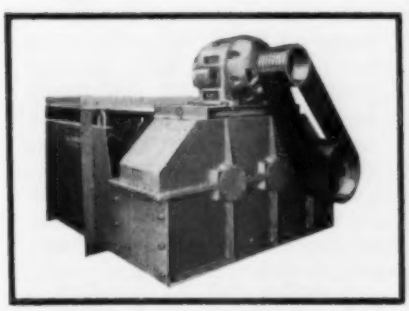
EIW
EAGLE IRON WORKS

Look into the Eagle Log Washer . . . . .

All over north America Eagle Log Washers are at work . . . year after year, assuring profitable operation for their owners. In case after case the Eagle has proved that bad material is only bad until it is made good . . . many pits and quarries considered hopeless were given a new lease on life when an Eagle Log Washer started churning muddy stone to make it come clean. The Eagle does it effectively and economically because of the good engineering and quality construction that is built-in. The maintenance-reducing Hydrotex Water Lubricated Lower Bearings are typical.

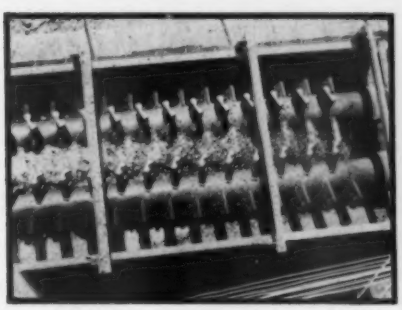


and you'll see why it's a money maker!



It takes a powerful drive to turn those two long, massive tubular steel logs and to scour tons of gravel at the same time . . . . but the big compound gear drive can do it easily. It is completely enclosed, tightly sealed so no dirt or water can get at the gears . . . . runs in an oil bath. Result is much lower maintenance costs.

Another exclusive feature of Eagle Log Washers is the Two-Piece Paddle Shoe—the shoe takes the brunt of the wear; protects the paddle support. The top half of the shoe can be replaced when worn . . . . no need to replace entire shoe . . . . further savings. Top half of shoe interlocks with bottom half.



Every piece of gravel gets scrubbed hundreds of times by the long rows of paddles from the time it enters the washer until it is discharged. Paddles convey the material to discharge gate as it is being scoured. You don't work for the Eagle Log Washer—it works for you!

Felix S. McGinnis Jr. Elected New President Of S.W. Portland Cement

Felix S. McGinnis Jr. has been elected president of the Southwestern Portland Cement Company. He succeeds George E. Warren, who was elected chairman of the board.

F. S. McGinnis

Mr. McGinnis has been associated with Southwestern for 20 years, having served most recently as executive vice-president. He has been active in several capacities in the firm's administrative department as vice-president and secretary, and played a prominent role in the company's expansion program at Victorville, Calif., and Odessa, Tex.

Canada's First Potash Mine Expected to Open Soon

Canada's first potash mine near Blairomore, Sask, is expected to be producing by late 1961 or early 1962, since water seepage has been stopped. A surface refinery has been completed.

International Minerals & Chemical Corp. (Canada) Ltd. is investing at least $25,000,000 in its mine at Blairomore. This sum is $11,000,000 more than originally budgeted. The cost exceeded estimates, first because of water seepage, which is now sealed off, and second, because of the necessity of freezing a layer of sand to —50 deg. in order to sink the mine shaft.

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$30 Million in Loans Sought by Flintkote For Plant Construction

Plans have been announced by executives of The Flintkote Company to borrow approximately $30 million this year, principally for construction of plants. Flintkote previously anounced that several gypsum plants, two asbestos-cement pipe plants, and a paperboard facility will be built.

Preferred stockholders will vote (March 22) on a proposal to increase the firm's authorized funded debt. The increase would not be more than $50 million in excess of restrictions imposed on the preferred stocks. (Flintkote's funded debt of about $18 million at the end of 1959 was said to have increased substantially since that time.)

Lightweight Aggregate Plant Being Built for Buildex, Inc.

Buildex, Inc., Ottawa Kans., is expanding production of Buildex lightweight expanded shale aggregate with its current construction of a second plant, near Marquette, Kans. The new rotary-kiln installation is expected to go into production this spring with an annual output of 125,000 cu. yd. of Buildex. This will double the capacity of the firm, which serves an area principally composed of Kansas, Missouri, and Nebraska.

An interesting milestone has been reached in the production history of the firm's product: the millionth yard was loaded and shipped on January 5, 1961. The prime use of the aggregate has been for lightweight concrete blocks, although the most interesting use since the product's introduction in 1952 has been the use of it in about 25 bridges in Kansas and Nebraska.

A cement distribution station is to be constructed in St. Louis, Mo., for the Universal Atlas Cement Division of United States Steel by The Rust Engineering Company. Four silos with a total capacity of 50,000 bbl. and a building for sack storage of cement will be included. Completion is scheduled for June, 1961.

Fred Hubbard, of N.S.A., Renowned Slag Engineer Resigns Active Duties

Fred Hubbard, termed the "best-known man in the slag industry in the United States," has officially retired from the position of consulting

Fred Hubbard

engineer for The Standard Slag Company, Youngstown, Ohio. He has also resigned from official service in the National Slag Association.

Mr. Hubbard had served as director of the association's research program since 1929, and as chairman of the technical committee since 1946. He served N.S.A. in many capacities for 35 years, most importantly as a member of its board of directors.

In recognition of his services to the slag industry, N.S.A. has presented Mr. Hubbard with the association's first Award of Merit. It was publicly presented at the recent N.S.A. annual meeting in Washington, D. C.

Many technical papers on the varied aspects of blast furnace slag utilization were published under Mr. Hubbard's direction. He has been active in many technical societies dealing with mineral aggregates, especially in the American Concrete Institute, the American Society for Testing Materials, and the Society of Professional Engineers.

A highlight of his professional career was his attendance (1954) at the International Conference on Slag Uses in Brussels, Belgium, as representative of the slag industry in the United States. He has been called the ambassador-at-large of N.S.A.

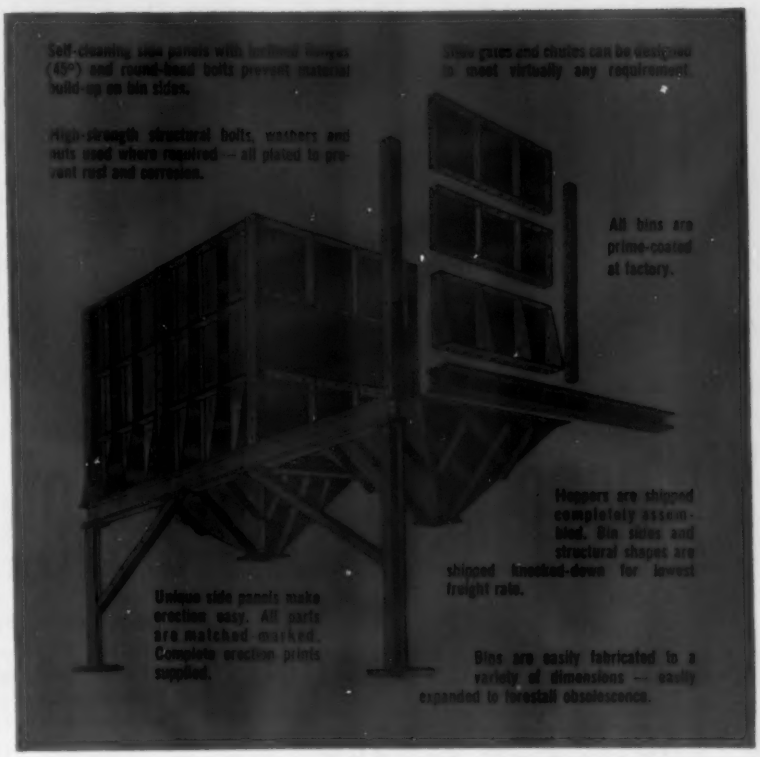
Shipments of portland cement in the United Kingdom in 1960 totaled 12.35 million tons, an increase of 6 percent over 1959, and a new record in the industry.

Ideal Cement Expansion Launched at Mobile Plant

Construction has begun on Ideal Cement Company's $1,500,000 expansion project near Mobile, Ala. With the additional facilities, scheduled for completion late this year, total storage capacity will be more than 234,000 bbl.

Among other new equipment will be truck scales approximately 140 ft. long and new conveyor systems.

Expandable, Bolted Finco-Engineered Storage Bins


All bins are prime-coated at factory.
Hoppers are shipped completely assembled. Bin sides and structural shapes are shipped knocked-down for lowest freight rate.
Bins are easily fabricated to a variety of dimensions — easily expanded to forestall obsolescence.

Heavy-duty, all-steel Finco Bolted Storage Bins are engineered by specialists to meet a variety of requirements: grain, salt, sugar, sand, gravel, coal, cement and other dry-bulk materials. They're easily erected, easily expanded. Write for new FINCO BINS specifications folder.

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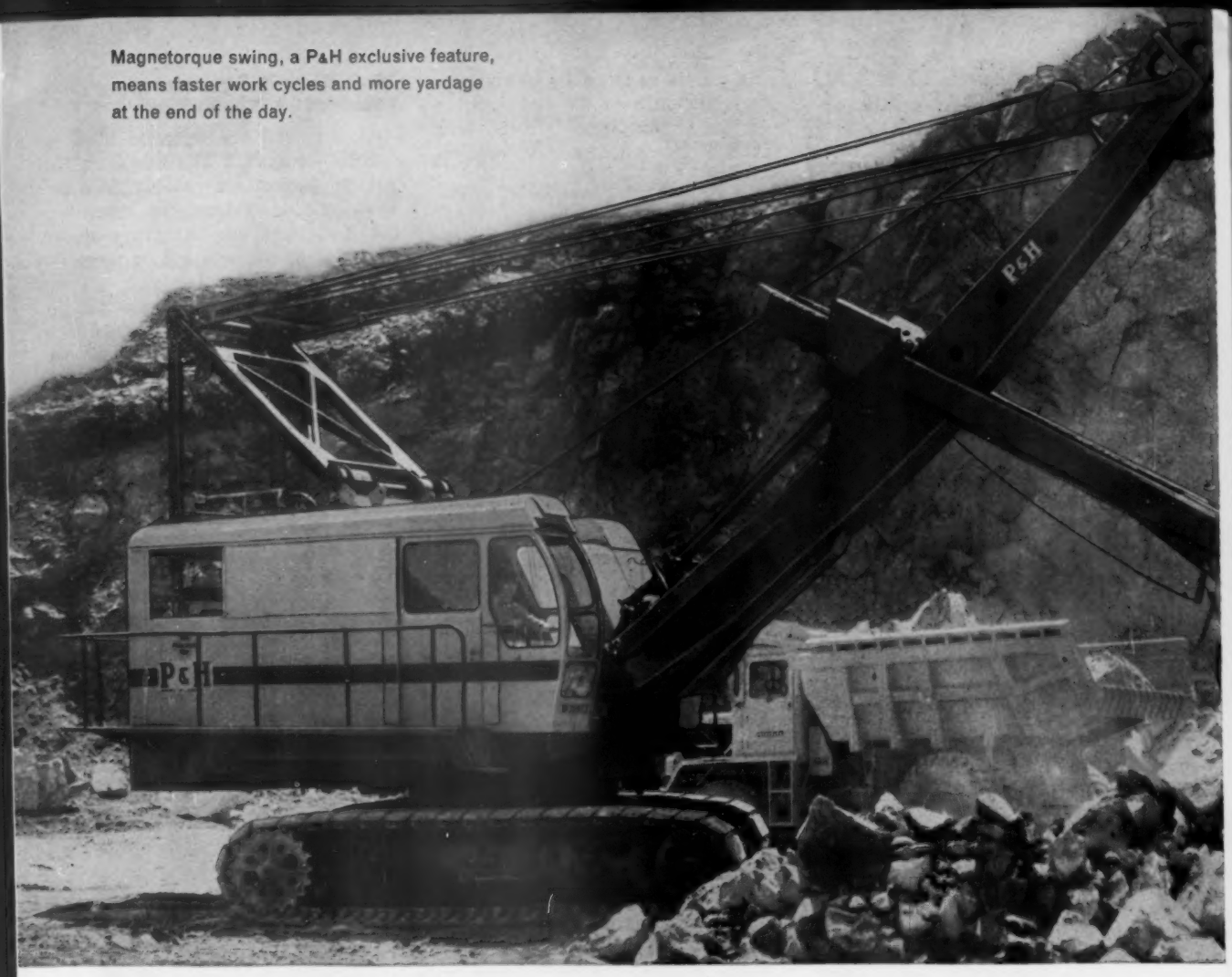


Magnetorque swing, a P&H exclusive feature, means faster work cycles and more yardage at the end of the day.

"We need rock and lots of it–that's why

SAM BRAEN ORGANIZATION, WYCKOFF, NEW JERSEY– LARGEST PRODUCER OF MATERIALS FOR HIGHWAY AND PAVING CONSTRUCTION IN THE NORTHEAST

Sam Braen, President, reports–

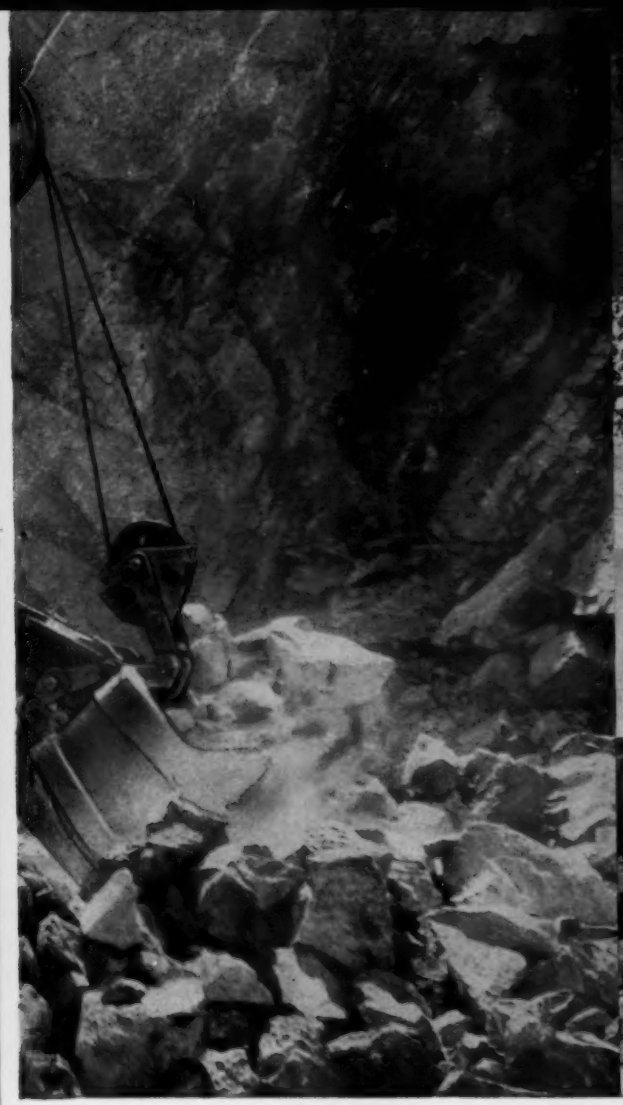
"Our 2½ and 3 yard P&H shovels are real 'rock movers.' Magnetorque swings are faster and smoother than anything I've seen in the industry. Our schedule requires rock and lots of it—that's why we use our P&H shovels for this operation."

2 P&H shovels keep production in high gear

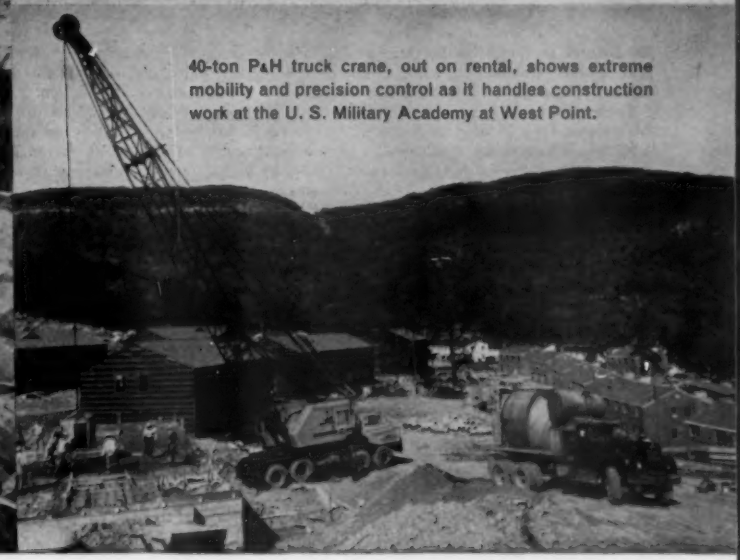
Oscar Dufour, Quarry Superintendent, uses his two P&H rigs to handle all rock excavation for the Riverdale Stone Quarry operation. These two rigs maintain a 20-second work cycle. Magnetorque Drive makes the cycles faster and smoother, permits more accurate loading of the trucks. His operators can work all day without tiring, so he gets more yardage per day.

P&H rigs give more efficient, trouble-free operation

Art Whitesell, operator of the 3-yard P&H, has this to say—"It has plenty of power for rock work . . . and compared to friction clutches that heat up



For the digging motions, P&H Planetary Chain Crowd and Retract gives more positive crowding action in the bank and a faster retract.



40-ton P&H truck crane, out on rental, shows extreme mobility and precision control as it handles construction work at the U. S. Military Academy at West Point.

we use P&H shovels with Magnetorque"

and have to be adjusted, Magnetorque remains the same all day, under heaviest digging. When operating on a slope and swinging up-hill with a load, Magnetorque always swings the machine easily, without over-heating."

P&H truck cranes handle other diversified operations

Walter Jorgensen, Braen's Vice President and Equipment Manager, uses a 40-ton and 60-ton P&H truck crane to handle work at his prestressed concrete division and for his equipment rental business.

In the manufacture of prestressed concrete beams, columns and slabs, the P&H rigs easily lift, move and stack the heavy sections. They can be moved quickly to the job sites to handle erecting work and from one work area to another to handle a number of jobs with complete safety and accuracy.

In Braen's equipment rental business, the steady demand for the P&H rigs testifies to their outstanding performance . . . more proof that ONE P&H ALWAYS SELLS ANOTHER.

For more detailed information on this job, write for Case History 131—or contact your P&H dealer.

HARNISCHFEGER P&H
Milwaukee 46, Wisconsin

AS YOU PLAN AHEAD, PLAN ON MAGNETORQUE . . . AND CHOOSE THE RIGHT MACHINE FOR YOUR WORK FROM 40 DIFFERENT MODELS . . . THERE'S A P&H FOR EVERY JOB! . . . WRITE FOR "THE FABULOUS 40"

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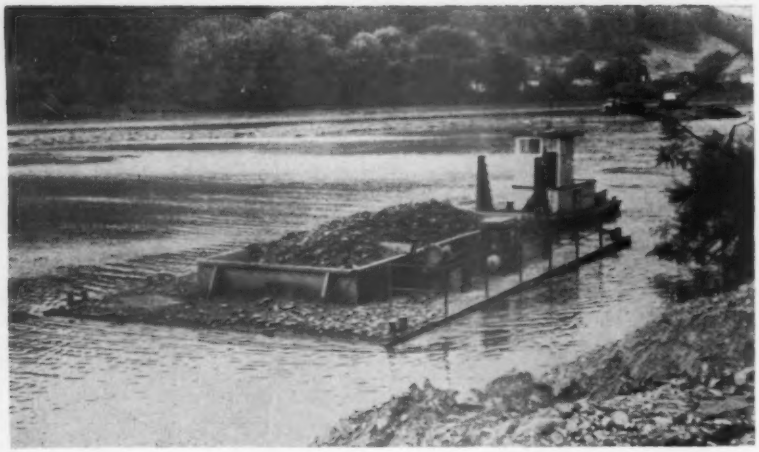


● Several sectional barges are playing a key role in the operations of the Tionesta Sand and Gravel Company, Tionesta, Pa. These marine units are worked steadily from May through December, recovering aggregates from the Tionesta River bottom.

Each sectional barge bottom-dump unit (foreground) is comprised of two standard Manitowoc Type H pontoon sections, 40 x 10 x 6 ft. and a pair of raked end sections, 30 x 10 x 6 ft., which have been assembled to form a rectangular, open-centered barge unit supporting the hopper components. The floor of the 100-cu. yd. capacity hopper is formed by two pairs of steel trap doors.

In the excavating phase of the operation a 1-cu. yd. dragline mounted on the deck of a second sectional barge (Type L) is used to dredge and load the bottom-dump barges. When fully loaded, the dump barges are pushed to a dump site at the river bank. On the shore, another dragline loads the aggregate into trucks.

Lime Sold and Used in November, 1960

Lime sold and used in the United States in November, 1960, totaled 950,966 short tons — a decrease from the October output, according to reports by producers to the U. S. Bureau of Mines.

Decreases were noted in all major categories. Open-market lime constitutes approximately two-thirds of the total lime reported and the remaining one-third of the total lime is captive tonnage.

Lime Sold and Used by Producers[1] in the United States, in Specified Periods of 1959-60, by Types and Major Uses in Short Tons

	October	November		January-November	
	1960	1960	1959	1960	1959
By types:					
Quicklime	780,691	745,857	670,267	8,513,892	6,419,650
Hydrated lime	223,818	205,109	154.312	2,503,828	1,889,563
Total lime	1,004,509	950,966	824,579	11,017,720	8,309,213
By uses:					
Agricultural:					
Quicklime	5,190	4,219	2,851	53,316	59,875
Hydrated lime	5,368	3,679	2,968	90,044	96,897
Total	10,558	7,898	5,819	143,360	156,772
Construction:					
Quicklime	7,227	7,090	6,696	76,832	152,991
Hydrated lime	77,593	69,369	68,349	861,698	910,395
Total	84,820	76,459	75,045	938,530	1,063,386
Chemical and other industrial:					
Quicklime	643,054	618,254	472,981	6,568,668	4,492,554
Hydrated lime	140,857	132,061	82,995	1,552,086	882,271
Total	783,911	750,315	555,976	8,120,754	5,374,825
Refractory (dead-burned dolomite)	125,220	116,294	187,739	1,815,076	1,714,230

[1]The monthly canvass excludes the output of plants producing less than 10,000 tons a year.

Deal Closed by Flintkote With Newfoundland Govt. For Gypsum Deposits

Arrangements have been completed between the province of Newfoundland and the Flintkote Company by which Flintkote has acquired, under a 99-year renewable lease, rights to vast reserves of high-quality gypsum. The company now can utilize the deposits to supply, as the market warrants, new gypsum-producing plants in the United States and Canada over an area extending from the Gulf of Mexico to the Great Lakes region.

The first of the plants is scheduled for immediate construction in the metropolitan New York area; initial engineering has been completed.

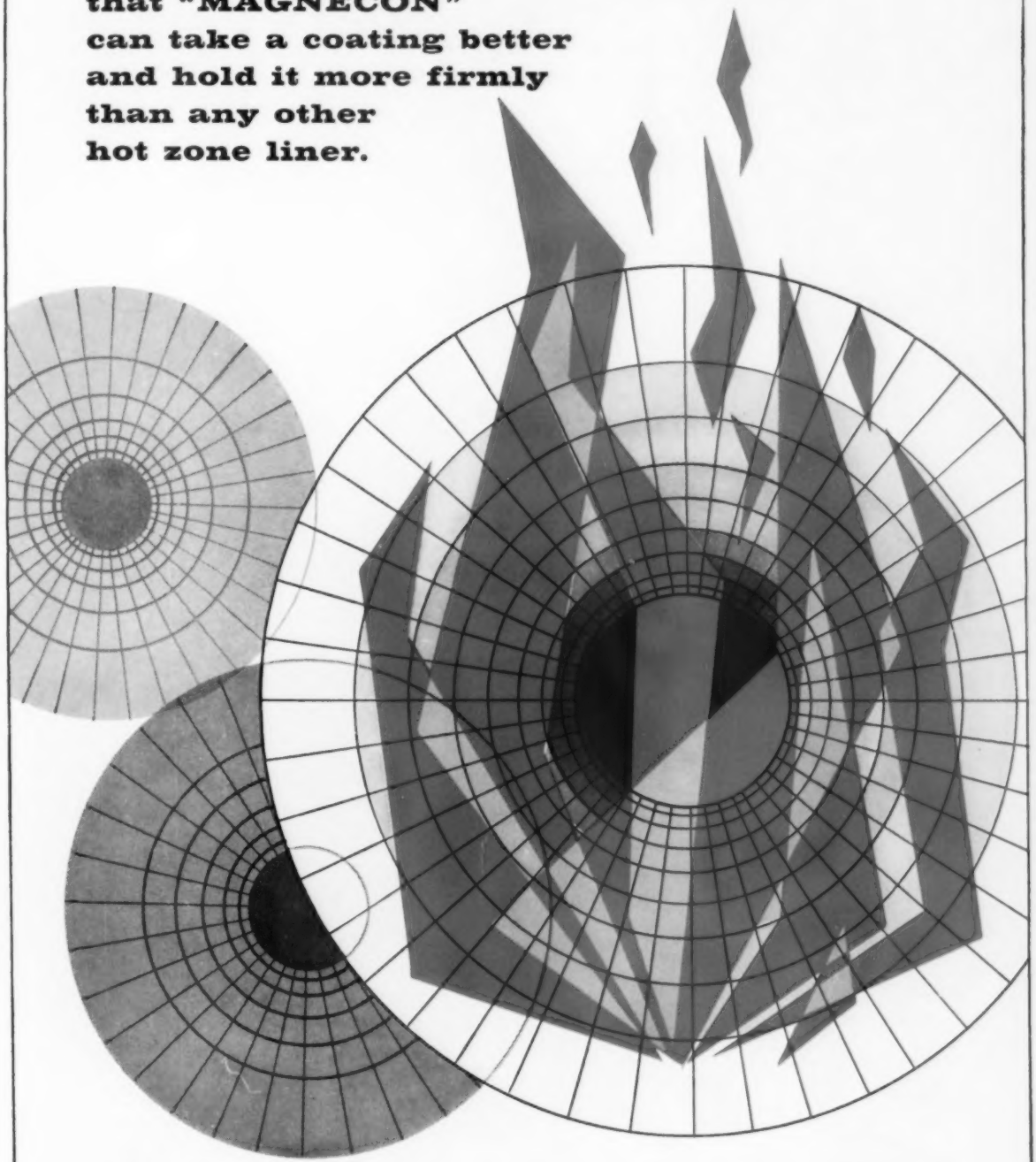
A previously announced "basis of understanding" with Newfoundland gave Flintkote access to some 40 square miles of Newfoundland's gypsum-producing properties at Flat Bay and subsequently to an area of nearly 3,000 square miles.

The contract further provides that Flintkote will acquire certain of the assets of the Atlantic Gypsum Company Limited at Corner Brook, Newfoundland, for approximately $1 million in cash. These include material and equipment to complete a six-mile aerial conveyor from the existing gypsum quarries at Flat Bay to a deep-water shipping point near St. Charles. Flintkote will also manage the gypsum plant of Atlantic Gypsum in Newfoundland, for the province, with the right to purchase it outright.

Although Flintkote has been directly in the gypsum business for only four years, indirectly it has been associated with the industry since 1931, when its Blue Diamond organization was founded. (Flintkote acquired Blue Diamond in 1959.)

WILLIAM B. HICKS has become a partner in the firm of Arthur E. Howland Co., Engineers, Los Angeles, now to be known as Howland and Hicks, Engineers. Prior to joining the company a year ago Mr. Hicks had been manager of engineering for a manufacturer of complete bulk-material-processing plants.

It has been demonstrated repeatedly that "MAGNECON" can take a coating better and hold it more firmly than any other hot zone liner.



CANADIAN REFRACTORIES LIMITED

CANADA CEMENT BUILDING, MONTREAL, CANADA

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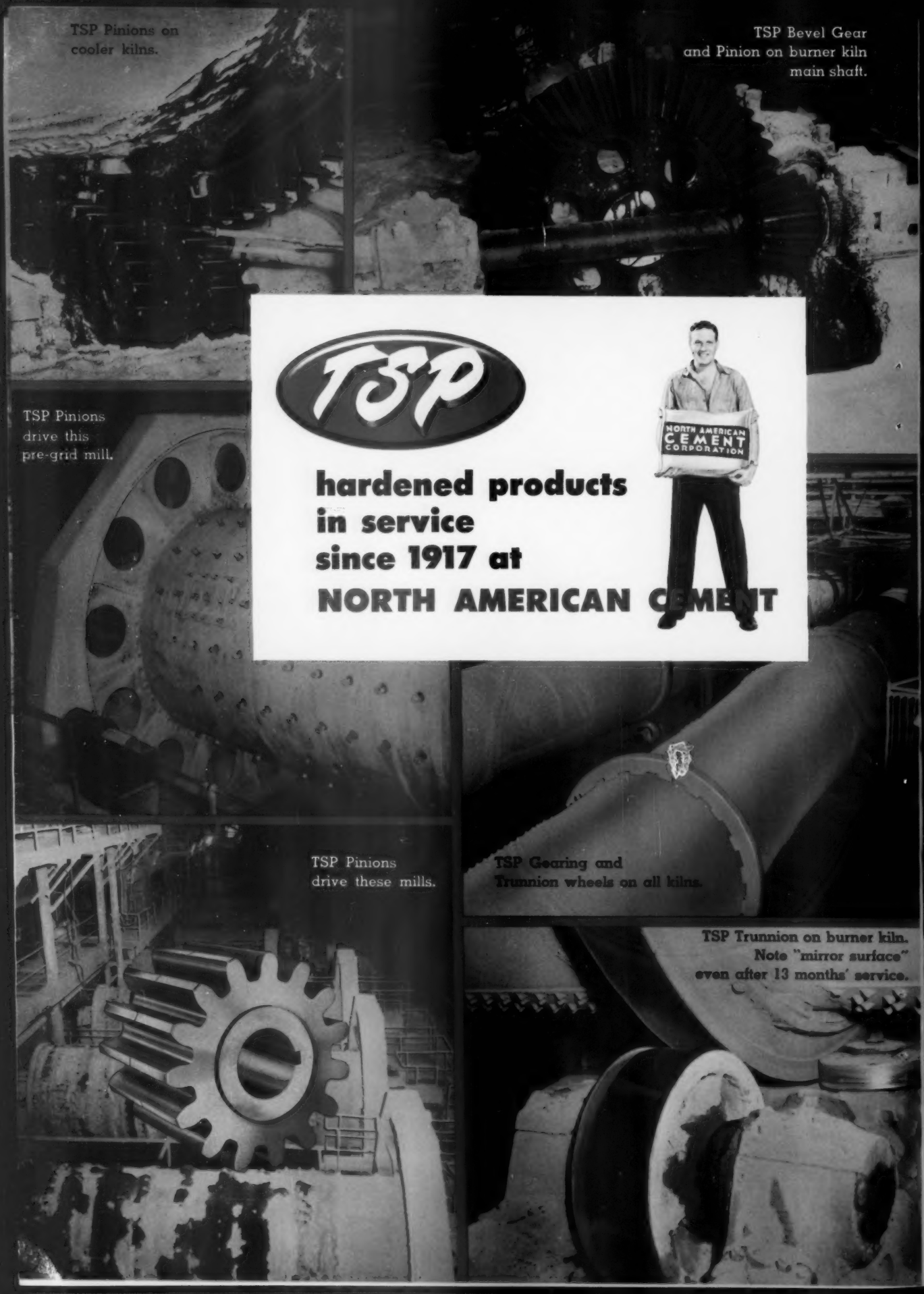

TSP Pinions on cooler kilns.
TSP Bevel Gear and Pinion on burner kiln main shaft.
TSP
hardened products in service since 1917 at
NORTH AMERICAN CEMENT
NORTH AMERICAN CEMENT CORPORATION
TSP Pinions drive this pre-grid mill.
TSP Gearing and Trunnion wheels on all kilns.
TSP Pinions drive these mills.
TSP Trunnion on burner kiln. Note "mirror surface" even after 13 months' service.

TSP Wheels on overhead cranes.

TSP Mill Drive Gears.

TSP Mill Bull Gear.

TSP Rope Drums on overhead cranes.

TSP hardened products, a few of which are shown here, are in wide use in all North American Cement Plants . . . and for very good reasons. Each year they save thousands of dollars in replacement costs alone. In addition, equipment runs better and longer, drastically reducing expensive 'downtime' costs.

"Tool Steel Process" products have superb quality and outstanding wear characteristics, a result of a special hardening process. A file-hard surface to the full depth of permissible wear gives maximum life. The core, refined for toughness and ductility, gives maximum strength. They are also guaranteed in writing to outperform any competitive product in the same service. That's why North American Cement and practically every other leading cement plant in the country have been big users of TSP hardened products for many years.

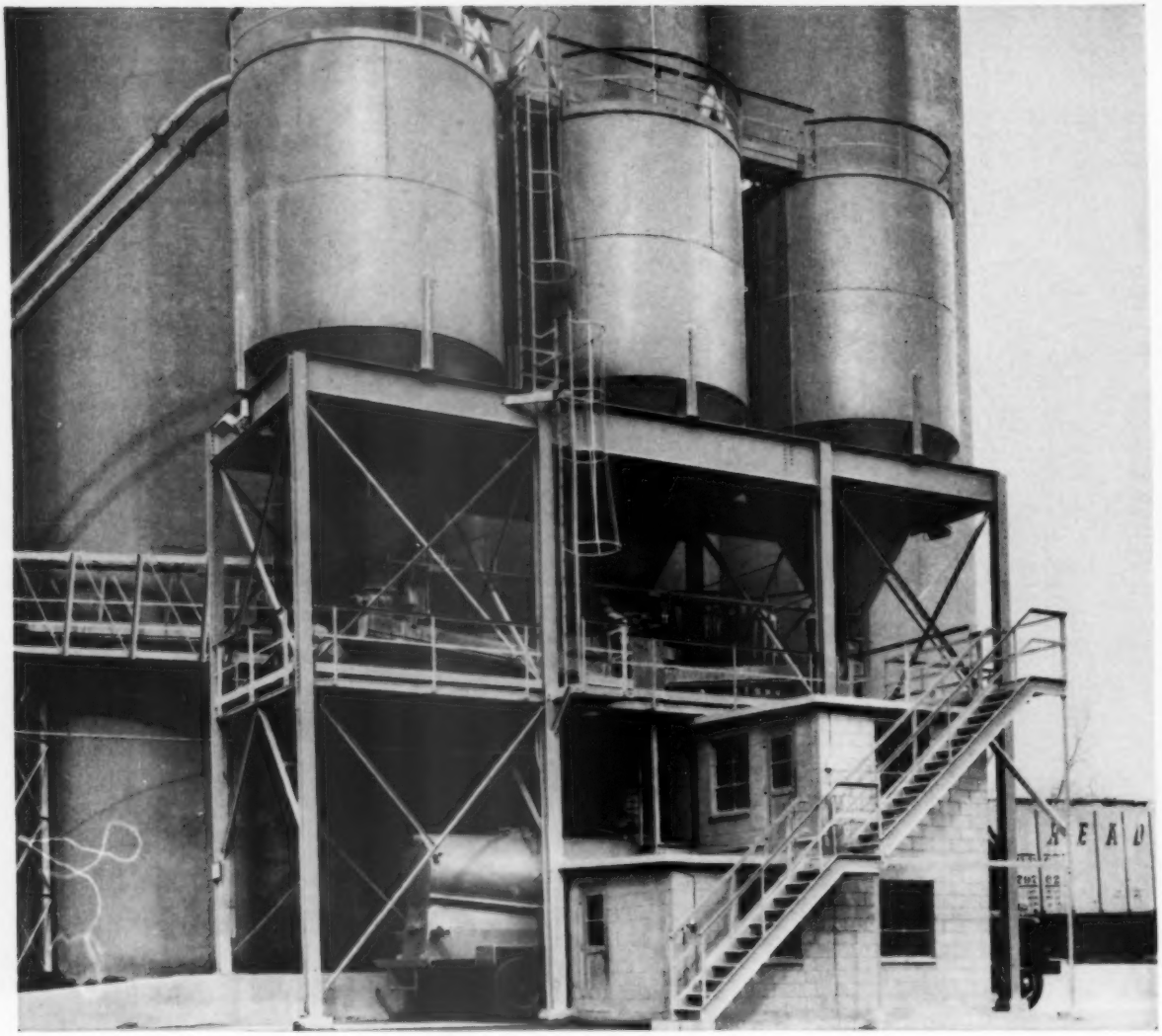
TSP products are made to order, or to fit existing equipment. Modern gear cutting machines produce gears in sizes up to 197" outside diameter. Other products up to 20,000 lbs. weight. Write today for fully illustrated brochure—"TSP Products for the Cement Industry."

THE TOOL STEEL GEAR AND PINION CO

CINCINNATI 16, OHIO, U.S.A.

The Standard of Quality Since 1909 for Gears, Pinions, Rolls, Wheels and Other Hardened Products

AD 1038A — Printed in U.S.A.



Why 9 Out of 10 New Bulk Loading Stations Use Airslide Conveyors

Fuller Airslide® Fluidizing Conveyors are the overwhelming choice for bulk truck-loading because dry pulverized materials, such as cement and barite, are bulk-loaded cleanly and efficiently in less than 5 minutes per truckload. One man can control the entire loading operation. Problem of dust is minimized since dust can be easily vented to dust collectors.

RIDES ON AIR

Material is conveyed on a blanket of air in the upper chamber of the two-chamber conveyor. Low pressure air is blown through the lower chamber, from which it passes upward through a layer of porous fabric. There is no need for moving parts, no noise, no lubrication. And fluid delivery by air means ease of control and fast shut-off when necessary.

LOW HP

Airslide Conveyor installations are characterized by their low horsepower consumption.

Airslide Conveyors are efficient and economical in operation too. Fuller engineers will gladly tell you more about how they can apply to *your* bulk loading needs. Write us at the address below. 2554 G-238

"See Chemical Engineering Catalog for details and specifications."

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FULLER COMPANY
100 Bridge St., Catasauqua, Pa.
Subsidiary of General American Transportation Corporation
Offices in Principal Cities Throughout the World

Fuller
....pioneers in harnessing AIR

F.T.C. Lodges Complaint Against American-Marietta In 44 Acquisitions

The Federal Trade Commission has accused American-Marietta Company, Chicago, with antitrust law violations involving 44 separate acquisitions from coast to coast in several product fields. The formal complaint charges that the acquisition program may substantially lessen competition or tend to create a monopoly in the concrete pipe, cement, lime, and sand and gravel, and crushed stone industries. The first hearing is tentatively scheduled for April 5 in Washington.

Robert E. Pflaumer, president of A-M, said that the acquisitions complained of were "reviewed by legal counsel, and the company is confident that its acquisitions have been entirely lawful."

The F.T.C. specifically made note of a 6,000 percent increase in net sales and a 14,000 percent increase in net income realized by the company during the fiscal period 1942-1959. The commission charges, "A substantial portion of both the total assets and the sales increase is attributable to the challenged acquisitions."

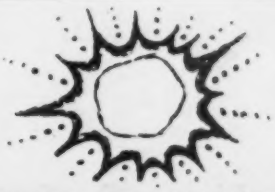
Alaskan Sand and Gravel Output Remains at '59 Level in 1960

The value of sand and gravel produced in the 49th state, Alaska, during 1960 was virtually unchanged from that of 1959, according to the U. S. Bureau of Mines. The value of stone decreased 20 percent.

As in past years, government agencies or their contractors produced the bulk of stone, sand and gravel. The Corps of Engineers, U. S. Army, The Bureau of Public Roads, and the State Division of Highways were the principal producers.

The estimated production of sand and gravel totaled 5,892,000 short tons, as compared with 5,859,000 short tons produced in 1959; the estimated value was $5,345,000, compared with $5,265,000 in 1959. Stone output in 1960 totaled an estimated 80,000 short tons, valued at $300,000 compared with 89,000 short tons, valued at $377,000 in 1959.

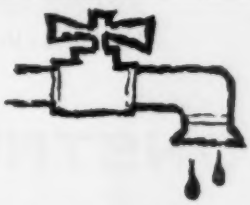
The Getman Brothers' KD-5A Scoot-Crete uses an air-cooled Deutz Diesel.



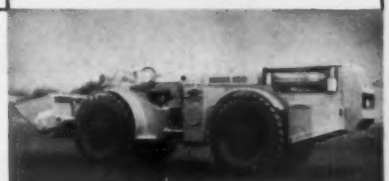
Reason: no warmup needed. Runs effectively from 40° below to 140° above (and it's approved by the Bureau of Mines.)

Fuel goes farther—every drop is burned.

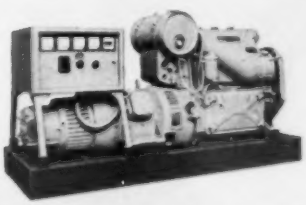
So there's less down time—no sulphurous acid condensation—hardly ever a carbon job.



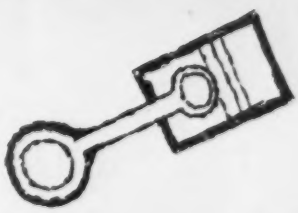
No water system; maintenance bills go down. You get full H.P. rating; no power lost for cooling.



Good reasons why Wagner ore carriers, Wagner scoopmobiles, the Jones Jackass and the Young Shuttle Buggy run on Deutz Diesels, too.



Deutz air-cooled Diesels are also used on generators, compressors, stand-by power equipment.



Complete parts and service facilities right where you need them.

PARTIAL MODEL	SPECIFICATION BHP	TABLE RPM
F1L 712	13	2300
F2L 712	26	2300
F3L 712	39	2300
F4L 712	52	2300
F6L 712	78	2300
F/A3L 514	48	1800
F/A2L 514	32	1800
A4L 514	72	2000
A6L 514	110	2000
A6L 614	110	2000
A8L 614	145	2000
A12L 614	220	2000
A6L 714	125	2000
A8L 714	168	2000
A12L 714	250	2000

Full range: 5 to 250 BHP in 1, 2, 3, 4, 6, 8, and 12 cylinders.

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H-120
PAYLOADER®

"fastest loader I ever had"

says Louis Romano

L. Romano's H-120 loads 25-Ton truck with 3 passes

L. ROMANO CONSTRUCTION CO.

Speeds loading from pit and stockpiles

L. Romano Construction Co. is a well-known firm in East Providence, R.I., where its large sand and gravel plant is located, as well as in surrounding states where it contracts for highway construction. Its big, mobile H-120 PAYLOADER is used at the plant and also on road contracts.

Its principal job at the plant is the moving and loading out of the various grades of finished material. It is also used frequently in the pit to help an older PAYLOADER load out raw material.

High Production

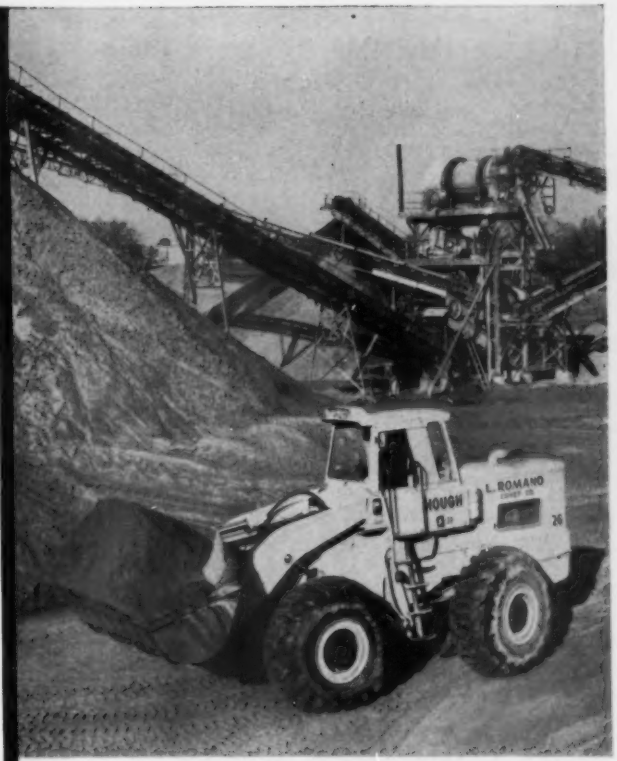
Mr. Romano says, "The H-120 has excellent versatility and bucket reach. It is the fastest loader that I have ever had on the job which includes previously owned machines. The H-120 gives me high production operation whether it be in the pit, material handling, or out on highway construction working under adverse conditions.

Easy Operation

"The operator likes the ease of operation, his visibility of the work area — especially the visibility of the dumping action while loading large trucks which enables him to place the load for the best distribution of weight. It also has unmatched flotation, sure traction and plenty of engine power that makes hard digging easy."

This is just one of the many plants throughout the country in which this big H-120 PAYLOADER is cutting costs, speeding operations and increasing output. It will pay you, also, to check your handling methods. Chances are a PAYLOADER of the proper size can effect important savings and increase your plant efficiency substantially. There are 8 PAYLOADER sizes to fit any plant requirements. Contact your HOUGH distributor or return the coupon for more information.

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.



Many design features contribute to the H-120's superior balance and load-carrying capacity. Low, level bucket position minimizes spillage in travel, promotes operator safety and fullest visibility.

Convertible to a Dozer

A conversion package is available to change the H-120 PAYLOADER tractor-shovel to a high-production dozer — gives you two machines for little more than the price of one.

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3-8-3

Dec. Construction Awards Reach Monthly High, Boost 1960 to New Record

A new all-time record for construction contracts awarded in the United States was set during 1960.

It was the result of an enormous volume of contracts awarded during the last month of the year, which not only pushed the year's total to a new peak of $36,317,629,000 (slightly ahead of the previous record set in 1959) but also set a monthly record. December contracts totaled $2,717,701,000 (a gain of 22 percent over December, 1959) which made it the highest figure ever reported for any December, and, on a seasonally adjusted basis, the highest peak ever reported for any month.

F. W. Dodge Corporation reported that these figures pushed the seasonally adjusted Dodge Index of construction contracts to a record of 302 (1947-49=100). The November Index was at 280, October was 294, and December, 1959, was 244.

In evaluation, Dodge economists pointed out that the great sources of strength in 1960 were highways —up 21 percent over 1959—and schools—up 13 percent. Other major categories with substantial gains for the year were commercial and manufacturing buildings.

The rather surprising burst of strength occurring in non-residential and heavy engineering contracts in November and December were said to be the chief reason that 1960, instead of showing a decline, became the 14th consecutive year to set a new record in construction contracts. This occurred despite a sharp decline in housing, which wound up some 12 percent behind 1959.

Dodge economists believe that construction will again provide the "shoring up" of the economy that it has provided in the past; the burst of contract-letting in December is expected to provide an offset to the recent declining tendencies of other lines of business.

Pertinent figures for December and for the full year, 1960, are shown in the table below.

	Year 1960	Year 1959	% Change
Nonresidential bldg.	$12,239,700,000	$11,386,604,000	+ 7%
Residential	15,105,423,000	17,149,677,000	—12%
Heavy engineering	8,972,506,000	7,732,263,000	+16%
Total construction	$36,317,629,000	$36,268,544,000	*
Dodge Index (1947-49=100)	265.7	265.4	
Dwelling units (no.)	1,120,988	1,312,251	—15%

	December, 1960	December, 1959	% Change
Nonresidential bldg.	$ 994,198,000	$ 790,238,000	+26%
Residential bldg.	877,733,000	993,185,000	—12%
Heavy engineering	845,770,000	440,637,000	+92%
Total construction	$ 2,717,701,000	$ 2,224,060,000	+22%
Dodge Index (seas. adj.)	302	244	
Dwelling units (no.)	62,864	77,253	—19%

*Gain of less than ½ of 1%

Preliminary 1960 Gypsum Data Show Output Rise, Import Drop

Crude gypsum mined in the United States during 1960 totaled approximately 10 million short tons and was valued at $34,700,000, according to preliminary figures based on reports of producers released to the U. S. Bureau of Mines. Imports of crude gypsum in 1960 were about 14 percent below similar imports in 1959 and totaled about 5.3 million tons, valued at $11,900,000.

About one-fourth of the total crude gypsum was used uncalcined as portland-cement retarder, agricultural gypsum, and filler. Calcined gypsum output, at nearly 9 million tons, was about 3 percent below 1959. Consumption of gypsum production dropped from 1959 due to the lower level of construction.

The British Columbia Cement Company plant at Bamberton, Vancouver Island, B. C., will receive its fifth safety trophy from the Portland Cement Association for a completely accident-free year in 1960.

American-Marietta Co. Enters Sand Production With Manley Acquisitions

An agreement has been signed by American-Marietta Company, providing for the acquisition of the business and assets of Manley Sand Company, Rockton, Ill., and an affiliate, Portage-Manley Sand Company. The transaction will involve a total of $4,825,000 in cash and securities.

Foundry and glass industries have been good customers of the Manley operations; their silica sand is also widely used by manufacturers of pottery, fiber glass insulation, and other products. Manley Sand Company was founded in 1907. It has plants and extensive reserves of high silica sand deposits at Portage, Wis., Oregon and Savanah, Ill., Festus, Mo., Michigan City, Ind., and Sawyer, Mich. All of these assets will be included in the A-M acquisition.

The two Manley firms will continue operations as Manley Sand Company, Division of American-Marietta Company, with Karl O. Geng remaining as president.

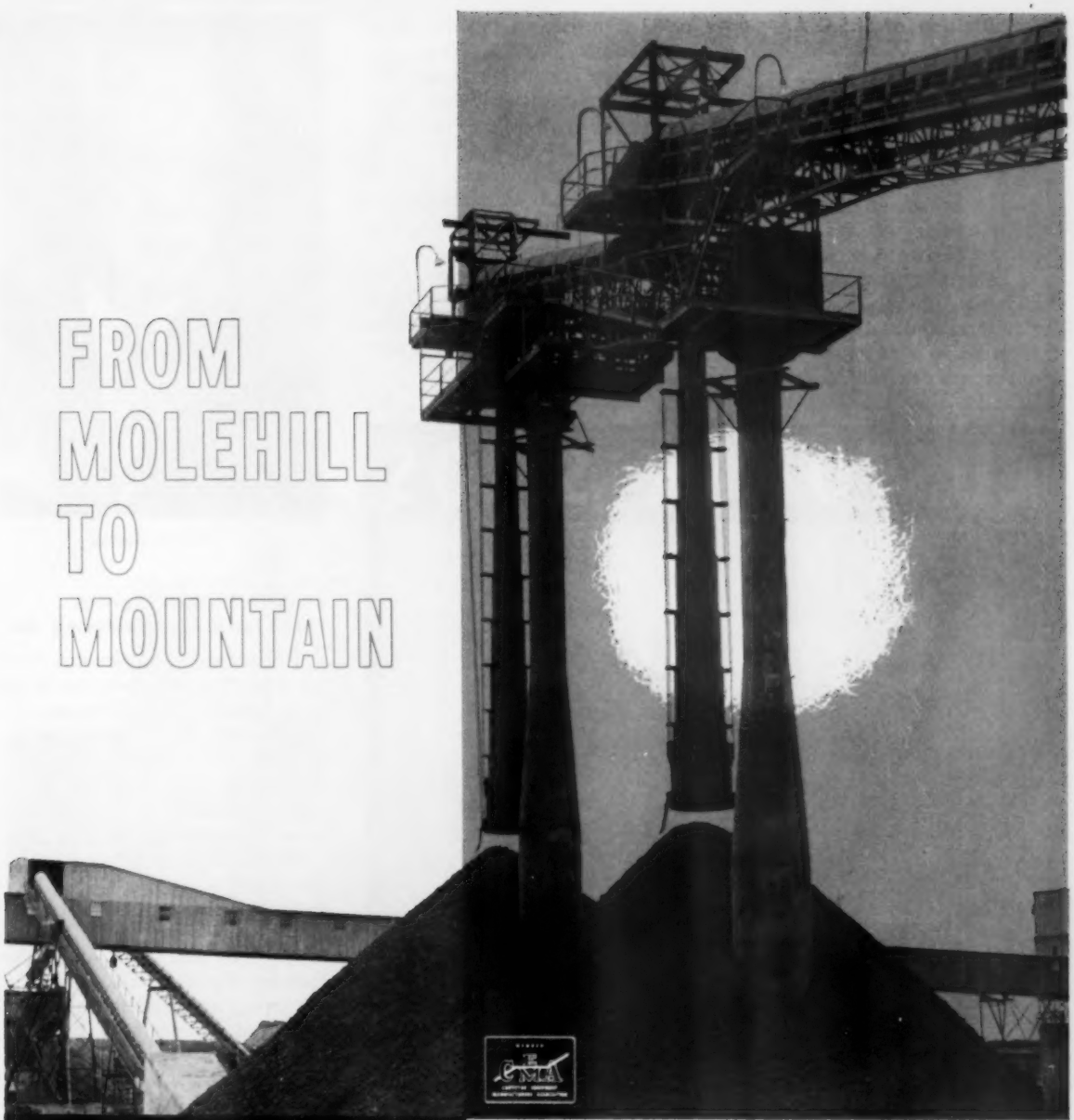
Cement Sub-Committee Of A.I.E.E. to Meet Apr. 18-20

The third annual cement industry sub-committee technical conference of The American Institute of Electrical Engineers will be held April 18-20, 1961, at the Sheraton Cadillac Hotel, Detroit, Mich.

The committee was organized to "stimulate and initiate engineering papers and discussions pertaining to electrical problems in the cement manufacturing industry; to help organize technical sessions devoted to these problems at A.I.E.E. meetings; and, eventually, to promote standards and recommended practices in the electrical engineering field for this industry."

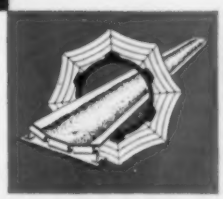
Ideal Cement Company, Denver, began business operations for 1961 with the largest backlog of contracts and commitments for the opening of any year, according to a report by Cris Dobbins, Ideal president. In his opinion, prospects for 1961 are much improved.

FROM MOLEHILL TO MOUNTAIN



A stack piling operation that grows from a molehill to a mountain. Bulk Systems conveyors move tons of shale daily at the Huron Portland Cement Company's Alpena, Michigan Plant—the worlds largest cement producing facility.

In this competitive age, whether your problem necessitates moving mountains of raw material or handling minute quantities of the finished product, unified responsibility for engineering, fabrication and erection of your entire materials handling system remains your most logical and economical choice. Consult the Bulk Systems Division of the Jervis B. Webb Company for your materials handling needs.



BULK SYSTEMS

DIVISION OF JERVIS B. WEBB COMPANY
8951 ALPINE AVENUE
DETROIT 4, MICHIGAN

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Mfrs. Division of N.S.G.A. Renames Top Officers

As this issue went to press, news was received of the untimely death of John E. Dunn, Allis-Chalmers Manufacturing Company, Milwaukee, Wis., who had been recently elected chairman of the Manufacturers Division of the National Sand and Gravel Association.

In losing his valued membership, the division was also required under its constitutional procedure to change the posts of its top officers. Therefore, the election reported on p. 82 is revised as follows: Harry F. Lawrence, W. S. Tyler Co., moves up to the chairmanship; H. J. Knudten, Universal Engineering Corp., becomes first vice-chairman; K. F. Lange, Link-Belt Co., second vice-chairman; and J. S. Carr, American Manganese Steel Div., American Brake Shoe Co., third vice-president.

The three representatives of the division on the N.S.G.A. board are: Emil Deister Jr., Deister Machine Co.; Mr. Lawrence; and Mr. Knudten.

Kenneth Lindsay

Kenneth Lindsay Retires From Iowa Manufacturing Co.

The retirement of Kenneth Lindsay, executive vice-president of the Iowa Manufacturing Company, Cedar Rapids, Iowa, has been announced. Mr. Lindsay has served the firm in this post for the last 12 years, and has been associated with Iowa Manufacturing for 31 years.

During his long business career, Mr. Lindsay has participated actively in the American Road Builders Association and its Manufacturers Division and The Construction Industry Manufacturers Association. He served as president, vice-president, and a director of C.I.M.A., and in 1957 directed the preliminary organization for the Road Show.

He also worked on the joint committee on C.I.M.A. and A.G.C. (Associated General Contractors), serving as co-chairman for several years. In addition, he was a director of the International Road Federation. More recently, he was named a founder-trustee of the Better Highways Information Foundation and a trustee of a construction museum to be erected at Pepperdine College in Los Angeles.

Permanente Cement Company will expand the dust control system at its Bellingham (Wash.) plant through the addition of an electrostatic precipitator at a cost of approximately $300,000.

CUSTOMER SILOS

Customer Silos & Pack House
Dundee Cement Co., Dundee, Mich.

Designed by St. Lawrence Cement Co.

"NICHOLSON" is busy building silos for trend setting leaders in the cement industry.

CUSTOMER SILOS are the current PARTITIONED structures, providing fast bulk loading of trucks and cars on scales immediately below the silos.

ENGINEERS AND CONTRACTORS

"NICHOLSON" jobs completed or being completed:

Medusa Portland Cement Company
Alpha Portland Cement Company
Penn-Dixie Cement Corporation
Allentown Portland Cement Co.
St. Lawrence Cement Company
Dundee Cement Company
Peerless Cement Company
North American Cement Company

THE NICHOLSON CO.

10 ROCKEFELLER PLAZA **NEW YORK 20, N. Y.**

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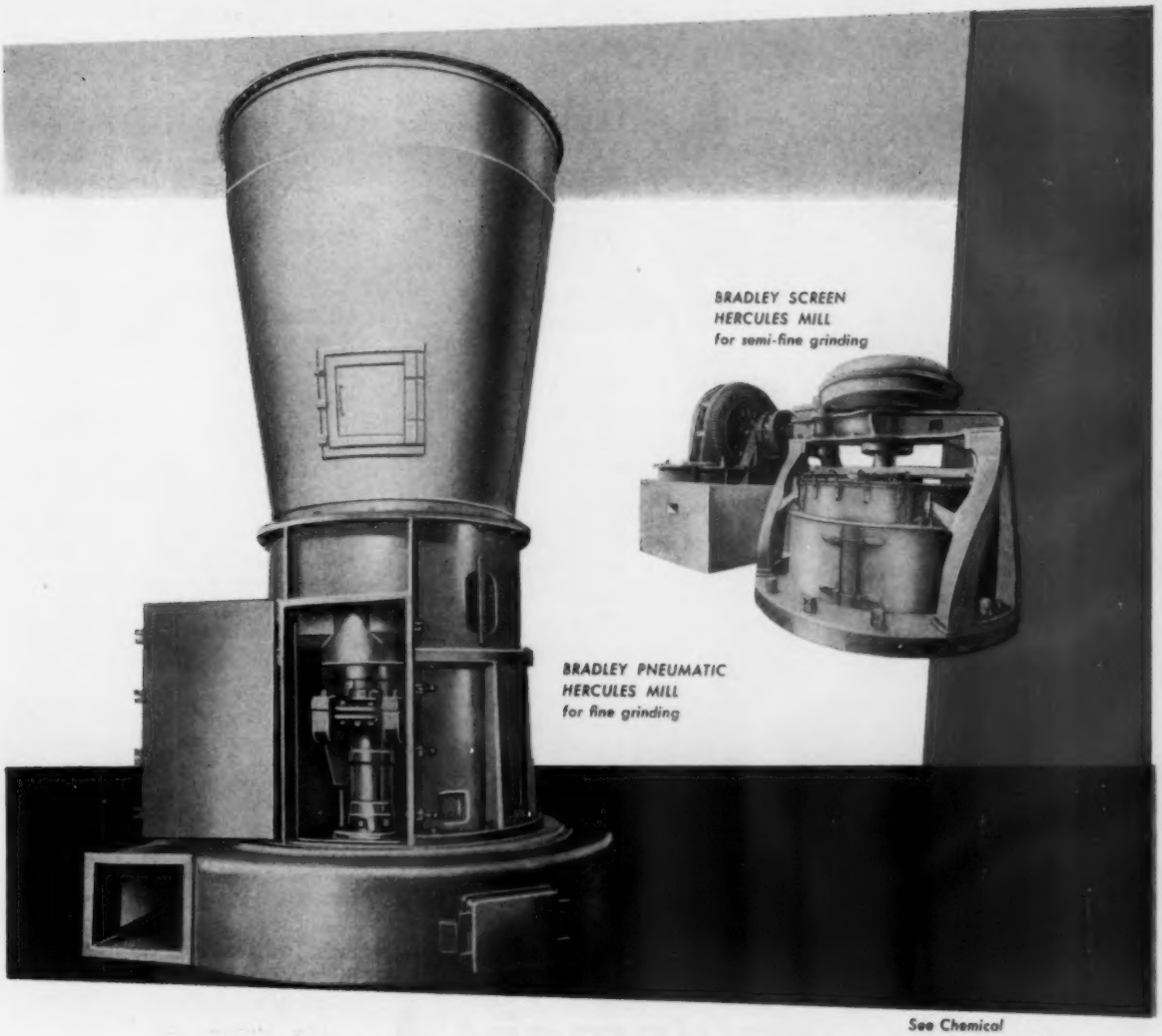

See Chemical Engineering Catalog or write for Bradley Catalog No. 63

There's a Bradley Mill to do your job in semi-fine and fine grinding...

For finished products of 8, 10 or 20 mesh containing a high percentage of 60, 100 and 200 mesh material, without additional screening, the Bradley Screen Type Hercules Mill is unsurpassed.

For finished products of all through a 20 mesh upwards to 99.5% passing a 325 mesh, the Bradley Pneumatic Hercules Mill offers a complete range of sizes to fit almost any requirement. Flash Drying in the Mill System is available where required.

All Bradley Mills are ruggedly built, dustless in operation and easily maintained. Every effort is made to keep maintenance costs to a minimum.

Bradley will *test-grind your material at no cost*, then recommend the *complete* mill system to do a better job on *your* job.

Superior Grinding Equipment Since 1891

BRADLEY

LONDON • ALLENTOWN, PA. • BOSTON **PULVERIZER COMPANY**

Air Pollution Control Assn. To Hold 54th Meeting in N.Y.C.

The 54th annual meeting of the Air Pollution Control Association will be held June 11-15 at the Hotel Commodore in New York City.

During the 18 technical sessions members will hear papers on vital subjects such as instrumentation, pollution standards, health, incineration, fuels, control equipment, meteorology, research, and allied problems. There will be a display of the latest instruments and the most modern advances in the air pollution abatement equipment field.

N.W. States Portland Cement To Activate New Facilities

At Mason City, Iowa, the modernization of Northwestern States Portland Cement Company plant is virtually completed.

The major item in the new construction is the 400- by 11½- by 13-ft. kiln, which will replace six of the original smaller kilns. In addition to the kiln, the following units are included in the expansion: five silos, 72 ft. high and 42 ft. in diameter, for kiln feed and homogenizing; an air-quenching cooler; a coal mill; raw- and finish-grinding mills; 12 clinker silos; an impactor and screen house; and a conveyor system.

Cement storage capacity was increased by about 200,000 bbl.

Study of U. S. Water Problem Offered by Caterpillar

Water Bill U.S.A. is the designation of a 16-page booklet released by the Caterpillar Tractor Company to point up the fact that waste is "the largest single threat to our water resources." It tells the story of the great money outlay needed to pay the nation's annual water bill. It describes ways in which Americans are trying to solve the water problem by working out better farming practices and watershed control programs.

Copies of the booklet may be obtained by writing to the Advertising Division, Caterpillar Tractor Co., Peoria, Ill.

High Production, Sales Reported by Oklahoma Cement

Good initial sales have been reported by Oklahoma Cement Company, which shipped its first cement in July, 1960, from the new 1,000,000-bbl. dry-process plant at Pryor, Okla. October and November cement production was approximately 140,000 bbl.

Plant construction cost, originally estimated at $7,109,000, was held to a total of $6,870,000. It was constructed by The George A. Fuller Company.

Treasury Department Rules On Import Cement Dumping

Two rulings were handed down recently by the Treasury Department in regard to cement imports.

The department determined that portland cement from Denmark is not being sold in the United States at less than fair value.

However, the Treasury Department determined that imports of portland cement from Sweden, other than white, non-staining portland cement, are being sold at less than fair value. Both determinations were made under the Anti-Dumping Act.

The case regarding Swedish cement was referred to the United States Tariff Commission for an injury determination.

The Danish cement case was based on one partitcular importation; the quantity of cement involved has been termed as insignificant. There have been no further importations since the filing of this particular complaint.

New Cement Export Depot Opened in Mombasa, Kenya

British Portland Cement has formally opened a new bulk-loading export cement station at English Point, Mombasa, Kenya. The depot, which cost about $1.4 million, is supplied with compressed air for tanker loading.

Exports this year are expected to total more than 100,000 tons. Shipments go to Dar Es Salaam or Mauritius. Bulk cement is now one of Kenya's most valuable nonagricultural exports, valued at about $2.8 million annually.

RENNEBURG
processing equipment

WRITE for FREE informative 16-page Renneburg Bulletin G560, "Advanced Processing Equipment"

Minerals Drying Systems
Complete Sand Drying Systems
Paving and Asphalt Plants
Combination Rotary Drying and Cooling Units
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Steam Tube Dryers
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Material Handling Equipment

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Serving the Process Industries for Over 85 Years

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Enter 45 on card, page 207 →

TYLER OFFERS UNIQUE TECHNICAL SERVICE IN SCREENING

An abrasive manufacturer wanted to know how to separate his raw material in several different grit sizes—sent a sample to the Tyler Customer Service Laboratory. Here the material was separated on production-size vibrating screens, with a variety of wire cloth types, permitting positive recommendations on equipment and wire cloth for each specification desired.

This type of technical service will help you obtain—in your own plant—the lowest possible screening cost. Call Tyler for help on your separation problems. From thousands of types of Tyler woven wire cloth, we can recommend the right type for your requirements.

TYLER

Standard of the world Tyler Standard Testing Sieves are recognized world-wide as the standard for classification of granular materials. This testing equipment tells you what sizes are present in raw materials, relative proportions, and helps you meet specifications and control quality.

TYLER CUTS YOUR COST OF SCREENING

• Requirements matched from world's broadest line of wire cloth • Fast shipments from the industry's largest inventory • Technical service backed by unique Customer Service Laboratory.

THE W. S. TYLER COMPANY *Cleveland 14, Ohio* • OFFICES: Atlanta • Boston • Chicago • Dallas • Los Angeles • New York • Philadelphia Pittsburgh • Salt Lake City • San Francisco • The W. S. Tyler Company of Canada, Limited, St. Catharines, Ontario • OFFICE: Montreal

"EIMCO IS THE ONLY MACHINE THAT WILL DO THE JOB"...

Says Contractor Holloway

That's sub-contractor H. Holloway, who specified this Eimco 105 Excavator, owned by George M. Brewster and Son of Bogota, N. J., prime contractor, for construction of a 900 foot x 17 foot diversion tunnel.
The project is an earth fill, rock faced dam to control the flow of Kettle Creek, Pa. The tunnel diverts Kettle Creek during construction and, upon completion, will be used to control flood waters, along with the dam spillway.
Advancement to date has been over 635 feet.
The Eimco 105 Excavator is used to muck out each round in the tunnel. Two shifts a day each complete two 9 foot rounds of drilling, blasting and mucking.
Two Koehring trucks take the muck out to the dam face, where it is dumped and later distributed to proper thickness.

THE EIMCO EXCAVATOR LOADS EACH TRUCK IN ONLY 45 SECONDS. THERE IS NO STANDBY MACHINE, FOR THE SUB-CONTRACTOR HAS EXPERIENCED THE DEPENDABILITY OF THIS TRACTOR-EXCAVATOR AND THE MINIMUM DOWN TIME IT REQUIRES.
No comparative equipment is in use because, as Mr. Holloway states, "Eimco is the only machine that will do the job." Operators are Boyd Martin and Dewey Patterson, whose long experience includes many jobs and hours with an Eimco, with some of the country's leading contractors.
Where the goings roughest, you just can't beat an Eimco! Get all the facts on the complete line of modern Eimco crawler-tractor equipment. **Contact the dealer or branch nearest you or write The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah, U.S.A.**

"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

THE EIMCO CORPORATION

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EXPORT OFFICE: 51 - 52 SOUTH STREET, NEW YORK, N. Y.
BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

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TRACTOR LOADER DIVISION
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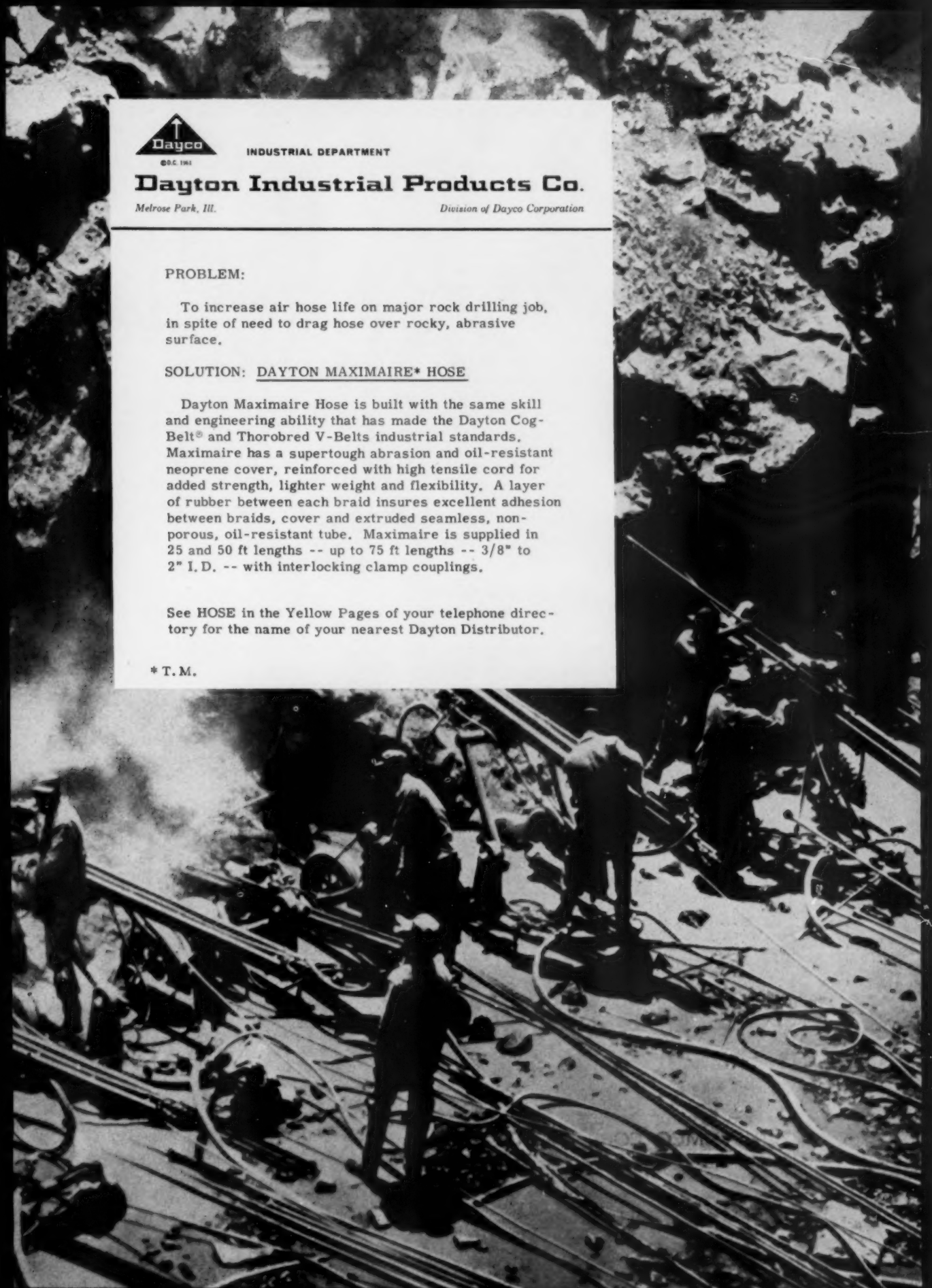
SALT LAKE CITY, UTAH — U.S.A.



INDUSTRIAL DEPARTMENT

Dayton Industrial Products Co.

Melrose Park, Ill. *Division of Dayco Corporation*

PROBLEM:

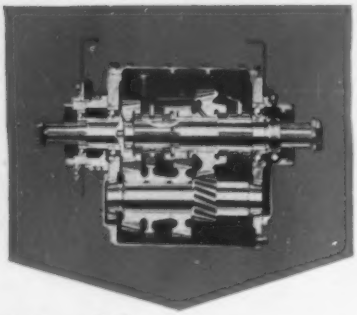
To increase air hose life on major rock drilling job, in spite of need to drag hose over rocky, abrasive surface.

SOLUTION: DAYTON MAXIMAIRE* HOSE

Dayton Maximaire Hose is built with the same skill and engineering ability that has made the Dayton Cog-Belt® and Thorobred V-Belts industrial standards. Maximaire has a supertough abrasion and oil-resistant neoprene cover, reinforced with high tensile cord for added strength, lighter weight and flexibility. A layer of rubber between each braid insures excellent adhesion between braids, cover and extruded seamless, non-porous, oil-resistant tube. Maximaire is supplied in 25 and 50 ft lengths -- up to 75 ft lengths -- 3/8" to 2" I. D. -- with interlocking clamp couplings.

See HOSE in the Yellow Pages of your telephone directory for the name of your nearest Dayton Distributor.

* T. M.



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MODEL

For medium-heavy duty trucks and tractors specify the

FULLER '65 SERIES

3-SPEED AUXILIARY

- **High capacity**
- **Widest range of ratios**
- **Top-mounted power take-off optional**
- **Low initial cost, reduced maintenance**
- **Available from all truck manufacturers on specification**

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	SPLITTER RATIOS		DEEP REDUCTION
MODEL	High	Intermediate	Low
3-A-65	.754	1.00	2.221
3-B-65	.804	1.00	1.239
3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74

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Specify the MODEL

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

Enter 48 on card, page 207

Drilling Operation Tripled With New Rock Drill In Underground Quarries

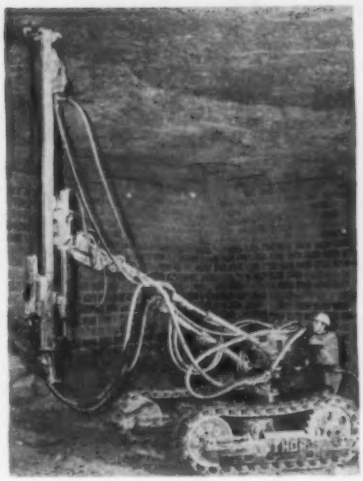
A decision to investigate methods by which slow and costly drilling operations could be improved has resulted in streamlined underground blast-hole drilling and roof-bolting procedures in the Thompson-Strauss Quarries, Inc., Turner, Kans.

Acting upon a query from Leonard H. Strauss, president of the firm, engineers from the Thor Power Tool Company's mining and contractor tool division studied the problems resulting from the use of old and cumbersome machines which were incapable of drilling 14-ft. holes for roof bolts in the 15-ft. ceilings of the underground quarrying operation. (The mine also houses what is reported to be the world's largest cold storage warehouse.)

The problem was solved when Thompson-Strauss took delivery of Thor's TR-5 crawler rock drill. By lengthening the boom, repositioning the mast of the self-contained drill, and adding remote controls for operating the feed-motor and drifter, Thor developed equipment capable of drilling almost three times the number of 12-ft. blast-holes— 80 to 90 a day instead of the 30 to 40 (average) of the older machines.

The unit, which has reportedly increased production by 200 percent in the Thompson-Strauss operation, has a large drifter with a 4-in. bore, as opposed to the 3- or 3½-in. bore which had been in use.

Because the drifter is larger, it is possible for the operator to obtain a heavier blow and sink the identical bit used on smaller rock drills with greater speed.



The drill shown in action, drilling 14-ft. holes for roof bolts far underground in a partially finished section of Thompson-Strauss cold storage warehouse.

A significant gain is realized in set-up time. With the new rig, an operator merely pushes two levers —those which control the track motors—and he can readily guide the drill into a specific position. The boom on the TR-5 is hydraulically maneuvered, thus eliminating manual adjustments.

The 9-ft. boom increases the machine's reach to the left or right to 15 ft. The mast was repositioned above the boom head to avoid interference when the mast is swung from one side to another, as well as to enable the operator to reverse the mast and rifter for upward drilling. The change makes the removal and reassembly of the mast unnecessary. (*Concluded on p. 49.*)

A view of the underground area utilized for storage of produce and commodities, both at natural underground temperatures and in specifically refrigerated sections.

ERIEZ *Magnetic Minute*

60 seconds that will help you improve operating efficiency.

CLOGGED BINS A PROBLEM?

If troublesome slowdowns caused by sticking, arching, stubborn materials are your problem, here's good news:

Eriez Hi-Vi® electro-permanent magnetic Unit (Bin) Vibrators are your answer. They've proven superior time and again for dependable movement of stubborn masses of granular, lumpy or powdered materials in bins or hoppers.

Their concentrated vibration is directed to deliver maximum efficiency precisely where it is needed. The full Hi-Vi line offers models for use with all sizes of bins with wall thickness to ½" — Special models are available for hazardous, dusty locations.

All models bring you these advantages.

- Direct AC operation — no need for rectifiers.
- Lower operating and maintenance costs.
- Compact, light-weight, easy to install.
- Weather-and-dust-resistant housings at no extra cost.
- No sliding or rotating parts.
- No wear, no lubrication.

Get the Hi-Vi unit that's exactly right for your operation. Full technical data is available in our new bulletin. Write for it to:

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113QA Magnet Dr., Erie, Pa.

MAGNA-THOUGHT

The manufacturer who does the most for his customers is the one who is qualified to provide application know-how as well as superior products.

WM. H. BENSON
Supervisor Vibration Engineering

ERIEZ

A GROWTH COMPANY . . .
10 NEW PRODUCTS IN THE LAST 5 YEARS

Enter 49-A on card, page 207

Repositioning the mast is accomplished by rotating the boom head so that the saddle shaft goes through the head yoke vertically rather than horizontally. The drill includes disk-type brakes, similar to those of an airplane, which lock the machine into position at the touch of a lever. Its jaw-clutch drive enables an operator to ready the equipment for towing to another site by simply disengaging the two clutches.

The first job assigned the unit was to drill into the base of the hill for a new entrance. A 15x35-ft. pattern was used. Forty percent straight dynamite or No. 4 Hercamite was detonated at 25-millisecond intervals after instantaneous blasting caps fragmented the stone forming the wedge. One and one-half tons of Bethany Falls limestone is produced from each foot of stone blasted.

Based on this unit's performance, Mr. Strauss plans to add two additional models to his operation. Thus, when the project is completed, three TR-5's will have replaced the five older rigs, without reducing the mine's 225-t.p.h. capacity.

The 15-ft. span which these drills possess is important to Thompson-Strauss because the tunnels leading into the mine, located at the base of 200-ft. bluffs, must be large enough to accommodate railroad cars and trucks.

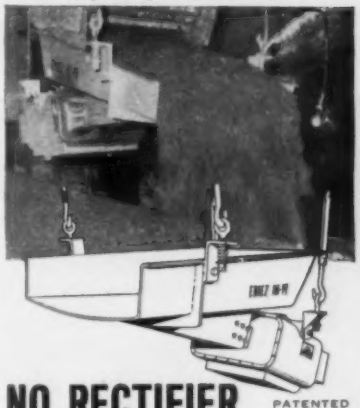
The Castle Sands Company, Newcastle, Va., began production of crushed sandstone for use as building and chemical sand, and in asphalt.

The midyear meeting of The Asphalt Institute board of directors will take place June 21-22, 1961, at Denver, Colo. The annual meeting is scheduled for December 6-7 at Washington, D. C.

For the fourth year, the University of Arkansas, Fayetteville, Ark., has received funds from Ideal Cement Company, Denver, for a $2,500 fellowship. Awards are made to outstanding graduate students in civil engineering.

ERIEZ *Magnetic Minute*

60 seconds that will help you improve operating efficiency.



NO RECTIFIER NEEDED WITH ERIEZ HEAVY-DUTY VIBRATORY FEEDERS

PATENTED

AC powered Eriez Hi-Vi vibratory feeders move large tonnages of bulk materials with accurate control . . . more efficiently and economically. Illustration shows one of a number of Eriez units available for heavy feeding applications where **big capacity and accuracy** are essential.

Whatever your application, there is an Eriez electro-permanent magnetic feeder that will meet your exact needs. And you get this exclusive combination of advantages: No rectifier needed . . . AC operation. Totally enclosed drive element ideal for hazardous, dusty, wet and corrosive installations. New fibre glass springs assure superior performance and control . . . longer life because spring breakage is practically eliminated.

The full line of Eriez Hi-Vi vibratory feeders includes models with feeding capacities ranging from ounces to many tons per hour.

Write for descriptive bulletin to:

ERIEZ MANUFACTURING CO.
113 OB Magnet Drive, Erie, Pa.

MAGNA-THOUGHT

Constant research, development and refinement are the keys to new and improved products. New and improved products are the keys to a company's growth.

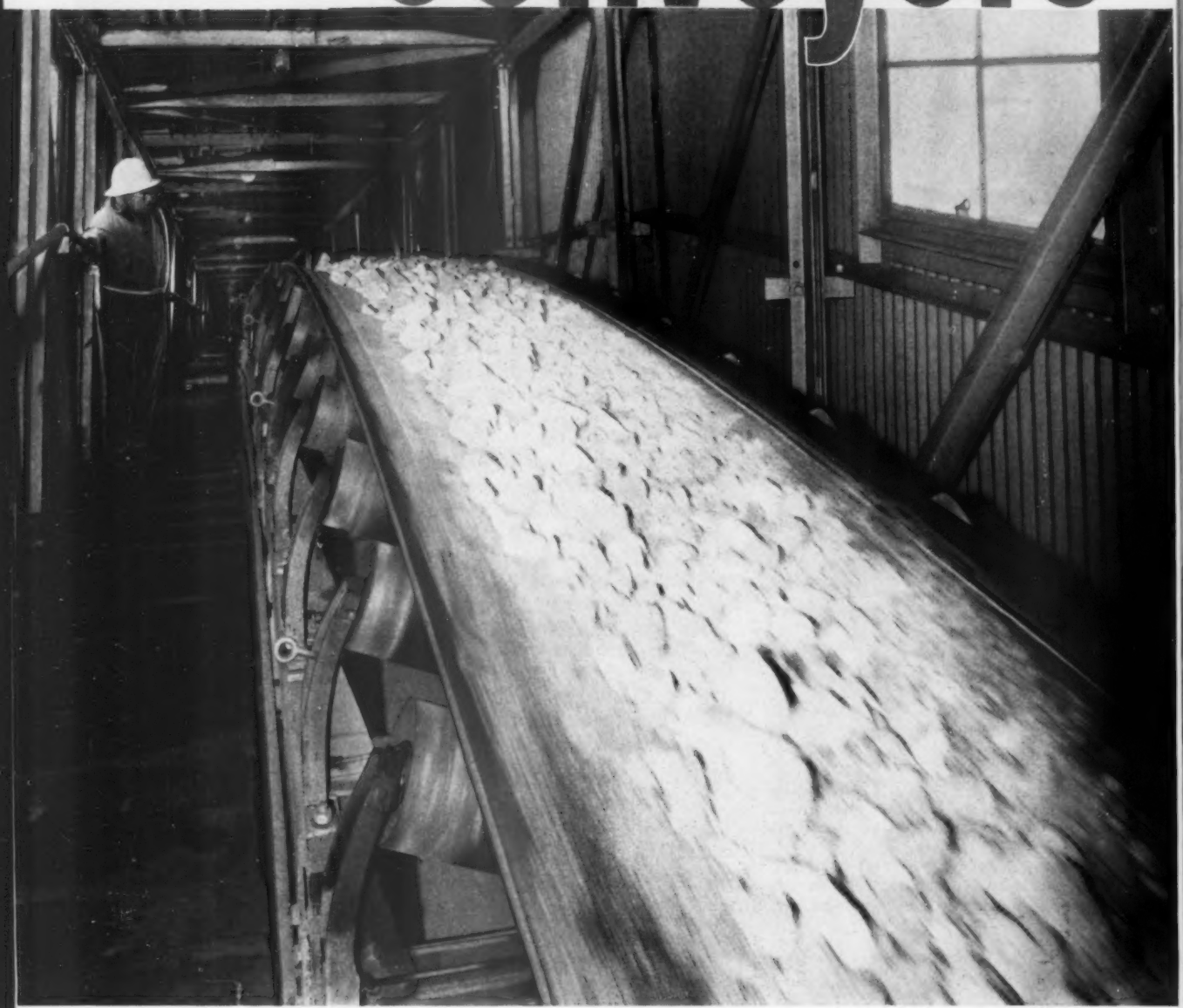
A. F. ISRAELSON
Chief Engineer

ERIEZ

A GROWTH COMPANY . . .
10 NEW PRODUCTS IN THE LAST 5 YEARS

Enter 49-B on card, page 207

LINK-BELT conveyors



The last word in value from the first name in conveyors

BELT CONVEYORS — Link-Belt serves as a single source for design, equipment and erection of *Job-Engineered* belt conveyors for small or large tonnages, for routes of any length. Link-Belt engineers have the selection advantage of industry's most comprehensive idler line—plus a broad range of pulleys, drives, terminal machinery and auxiliary equipment. Husky, *Pre-Bilt* sectional belt conveyors are also available.

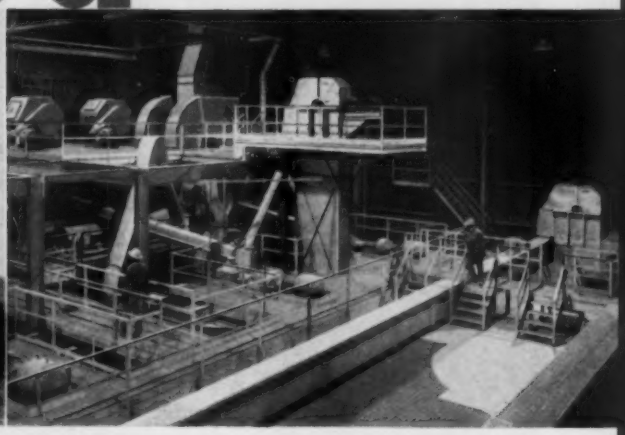
"Conveyors unlimited" means just that! Link-Belt offers *industry's most complete line of conveyors* . . . all built to quality standards that are second to none in the field of materials handling. And because Link-Belt makes such a wide variety of types and sizes, you can be sure of unbiased recommendations . . . can count on the operating economies and efficiencies that only perfectly job-matched equipment provides.

Also important, Link-Belt can provide *complete* handling systems . . . patterned exactly to your requirements with a background of more than 80 years of conveyor specialization. Our engineers are familiar with the particular handling needs of every industry. It's more than likely they have met—and solved—many problems similar to yours. We will design, equip and erect your entire installation . . . and accept full responsibility for its successful operation.

For full information—on single components or complete systems—large or small—contact your nearest Link-Belt office. Catalogs covering all conveyors are available on request.

unlimited

The line that means savings, whether handling raw materials or finished products

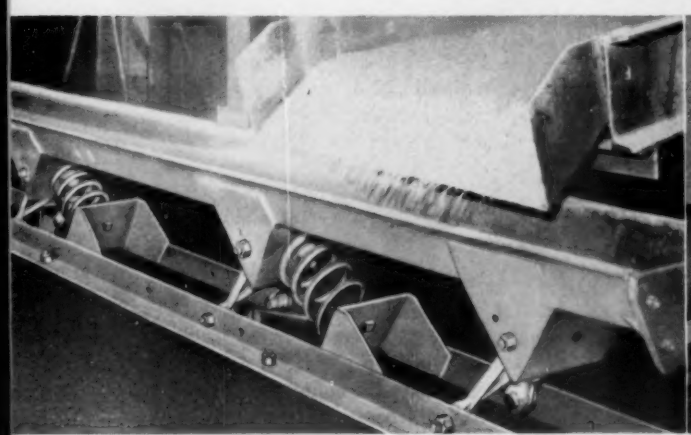


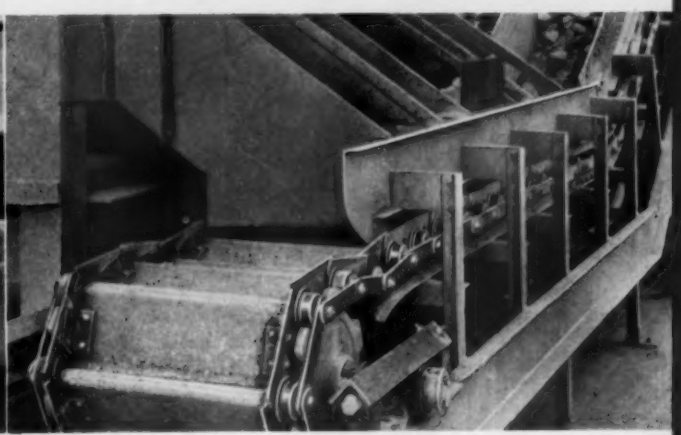
JETSLINGERS can hurl material as far as ninety feet, can pile to heights of thirty-five feet above discharge. Units consist of a tapered spout feeding a short, high-velocity belt conveyor. Material is thrown by means of centrifugal force, with control of both trajectory angle and direction of throw. Portable or stationary units available. *Jetslinger* adds new efficiency to ground storage operations.

BUCKET ELEVATORS — Unlimited solutions to inclined or vertical movement of a wide variety of materials—from chunks to powders. Fourteen types in four basic designs are built from integrated components—designed, fabricated and *factory-aligned* by Link-Belt for easy installation, reliable performance.

OSCILLATING CONVEYORS — Whether handling fine or coarse materials, Link-Belt's four types of oscillating conveyors—Flexmount, Coilmount, Heavy-Duty Coilmount or Torqmount—provide surge-free movement of materials. All types feature *full-time positive action*, yet operate as near to *natural frequency* as possible to minimize power requirements.

APRON CONVEYORS — Wide application range provides efficient handling of sand, rock, gravel and many other materials. Materials are moved with a minimum of degradation over horizontal or inclined paths, or a combination of both. Jointed, overlapping or interlocking apron pans form the continuous carrying surface. Variety of chains, coordinated with pan design, matches the conveyor to your needs.





LINK-BELT

CONVEYING AND ELEVATING EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses and District Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs; Switzerland, Geneva. Representatives Throughout the World. 15,010

Keeping production on the move in every industry

Apron conveyors
Arm and tray elevators
Belt conveyors
Bucket elevators
Bucket elevators-conveyors
Bulk-Flo
Car-type conveyors
Chain conveyors
Circular carrier conveyors
Drag conveyors
Flight conveyors
Flite-Flo conveyors
Oscillating conveyors
Power-and-free conveyors
Pusher chain conveyors
Scraper conveyors
Screw conveyors
Sidekar-Karrier conveyors
Skip hoists
Slat conveyors
Trolley conveyors
Trukveyors

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Johns-Manville Corp. Plans Erection of Mill At Newfoundland Location

Officials of Johns-Manville Corporation have agreed to proceed with the building of a processing mill at the Advocate asbestos deposit in northern Newfoundland.

Financing of this project, which is expected to require approximately $18 million, will be headed by a group headed by Canadian Johns-Manville. The latter will provide about half of the funds, and Johns-Manville's associates the remainder.

Among other current activity of the firm in Canada is the acquisition of a 50-acre site at Medicine Hat, Alta., for possible expansion of J-M's Canadian Products Division in western Canada.

A.S.C.E. Convention Program To Spotlight Water Resources

A topic currently receiving nationwide attention—water resources—is the theme of the program for the national convention of the American Society of Civil Engineers, which will be held at the Westward Ho Hotel, Phoenix, Ariz., April 10 to 14, 1961. More than 150 papers will be presented at nearly 50 sessions during the five-day meeting; 12 of the society's 15 technical divisions will participate in sponsoring the sessions.

Six water resources joint sessions are planned. Considerable attention also will be paid to highway engineering problems. A special feature of the convention will be tours of the Glen Canyon Dam site, at Page, Ariz. (This structure has been the topic of several PIT AND QUARRY reports.)

Among the featured speakers at the luncheon sessions during the week will be Senator Barry Goldwater (R., Ariz.).

The relocation of U. S. Highway 99 in Oregon forced the Bristol Silica Company to abandon its plant at Rogue River and build a new plant 3 miles west of Gold hill.

Gifts from Producers Aid Students, Teachers In Two Western Colleges

Subsidization of education by business firms — in the form of gifts—has become a popular trend among producers in the nonmetallic minerals and construction industries.

The Phoenix (Ariz.) Cement Company presented the school of architecture of Arizona State University with a check of $500 in lieu of giving Christmas gifts to its clients. This was the second year the firm had made a holiday grant to the school. The funds are to be used for scholarships.

In Everett, Wash., the Associated Sand and Gravel Company presented Everett Junior College with a $1,000 check to finance (for the third year) a teaching fellowship in engineering sciences. This program was set up to finance research done by an instructor toward the improvement of engineering education at the college in relation to local industrial needs.

• Postscript

We regret that the identity of the author of *Lab Assistant's Lament,* which appeared on page 74 of our February issue, was inadvertently omitted. The author, who wrote from experience, is Denzil Ferguson, a member of the laboratory staff of Universal Atlas Cement (division of United States Steel Corporation) at Fairborn, Ohio.

Interstate Sand & Gravel Company, Covington, Ind., has purchased Neff Concrete Products Company, Danville, Ill. The latter firm will continue operations under its previous name as a wholly owned subsidiary of Interstate. Harry McGurk, who has been in Interstate's sales force, will become sales manager of Neff.

Plans have been made by A. M. Matlock, Eugene, Oreg., to erect a crushing and screening plant at the Paisley perlite deposit in central Lake County. He will also build a diatomite processing plant in the Silver Lake area of Lake County.

no more downtime to replace connectors...

HANCO FLUX POWER SCREEN HEATERS

transmit power through the air!

With the all new Flux Power by Hanco all mechanical connections between transformer and screen are eliminated. The 0 to 4000 ampere current is transmitted through the air by inserting a conductor through the eye of the transformer. This permits unrestricted vibration, maximum power transmission and true screen balance.

5 YEAR GUARANTEE

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★ Dual voltage, 220/440 volt
★ Use either plain or stainless cloth
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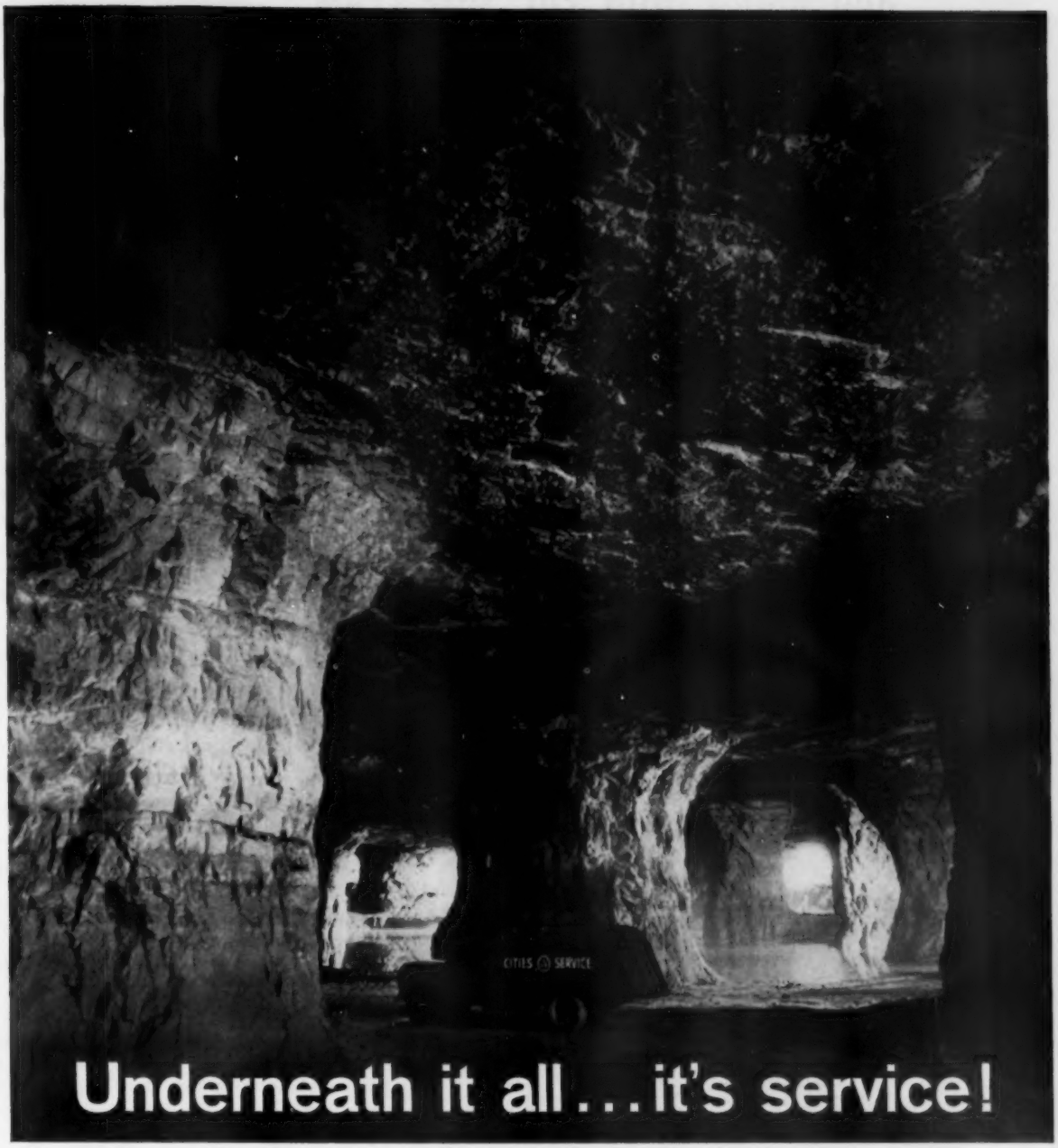

Underneath it all... it's service!

THERE's only one way to get to the Weiler Marble Company quarry of Ste. Genevieve, Missouri. Down a rough dirt road . . . over a steep hill . . . and deep into the ground. This is no problem to Cities Service. It's just another example of how every customer gets reliable service . . . no matter where he is!

The Weiler Company has depended upon Cities Service for the past 2½ years. Mr. Herman Weiler, President, is impressed with the products as well as the service. For drilling, his company counts on Neptune 13Z oil. He states, "It's the best drill oil I've ever used. Really sticks to the metal it's applied to."

Mr. Weiler's Schramm 600 air compressor engine has been running 12,000 hours on DC-300 oil without a repair. Results such as this convinced him to use nothing but Cities Service products for all his equipment.

Mr. Weiler gets expert technical help, fast dependable service, and the best products available . . . all from Cities Service. You will, too! For more information, contact your nearest Cities Service Office or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

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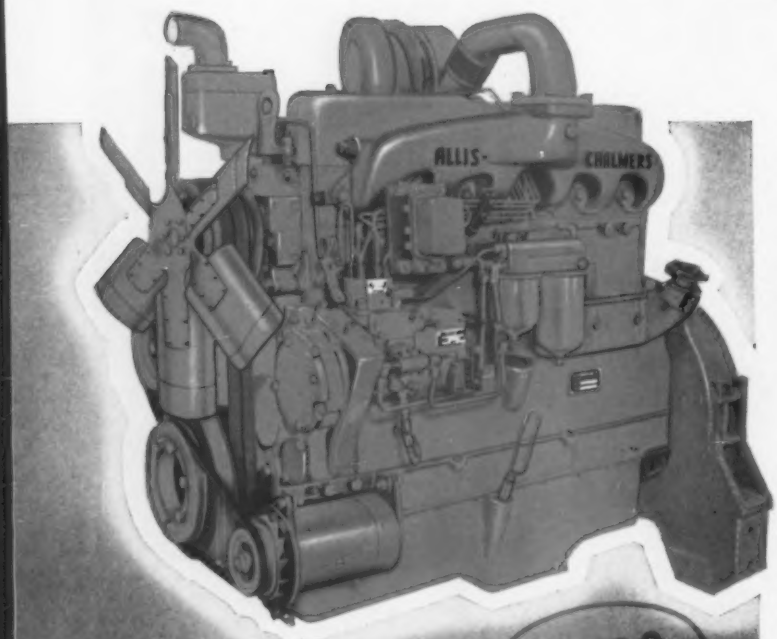
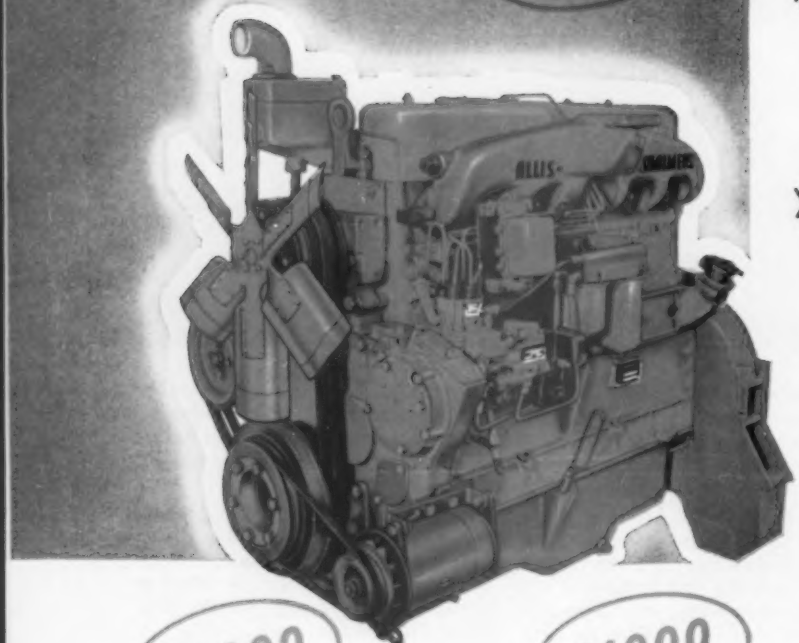
11000 and 10000 JOIN THE A-C TEAM OF MODERN DIESEL

WORK POWER



210 hp (turbocharged) **11000**



145 hp **10000**

350 hp (turbocharged) **21000**

235 hp **16000**

Now there are four of a NEW kind designed to give you...

LIGHT APPETITE FOR FUEL

Controlled turbulence mixes fuel and air thoroughly. Assures complete combustion — fuel savings to 27% and more!

"This new engine is not only doing the work of the larger engine it replaced, but is saving 30% and more on fuel!"

HIGH, SUSTAINED TORQUE — RAPID RESPONSE

You have **work power** that hangs on to overloads over the entire speed range.

"Amazingly rapid response under heavy loads."

CLEANLINESS IN DESIGN AND OPERATION

Efficient combustion converts fuel to **work power,** not smoke. There is no excess "plumbing" to invite service problems.

"Their clean, simple design makes them easy to service. To our knowledge, they are the best buy in a diesel engine for rough work today!"

FAST STARTING

These engines start "right now" directly on diesel fuel. No ether, no pre-heating, no long work-robbing warm-ups even in freezing temperatures.

"Starting is excellent, even in the 0 to 10° range which we have fairly often here."

* * *

Find out how profitably this new kind of **work power** can serve you. See your Allis-Chalmers dealer or write for free bulletins — BU-718 on the 11000 and 10000; BU-540 on the 21000 and 16000. Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

POWER FOR A GROWING WORLD

A-C

BE-24

North American Cement Corp. Now Marquette Sales Company

Formal transfer of all properties and assets of North American Cement Corporation to Marquette Cement Manufacturing Company took place the last day of January in the Marquette executive offices in Chicago, on the basis approved by the shareowners of both companies on January 10.

Marquette now owns and operates the physical properties of North American, and will sell the products of those properties through a new wholly owned selling company carrying the name of North American Cement Corporation.

Interstate Road System Cost Estimated at $41 Billion

Frederick H. Mueller, former Commerce Secretary, stated on January 12 that $11.6 billion of new federal authorizations will be required to complete the Interstate Highway System. He added that the new cost estimate for the program remains "unchanged" from the previous estimate of $41 billion.

The latter statement is explained in the following manner. The Bureau of Roads adjusted the previous estimate of $37.5 billion (for 38,548 miles) on the basis of a 41,000-mile system, arriving at an adjusted total of $41 billion (1958 estimate), but made no allowance for administration, research, and planning. The new estimate does make such allowances. Adding in the new items exactly offsets a decrease of approximately $1 billion in the estimated cost.

Operations of the Mueller Sand and Gravel Company, Hanover, Kans., will be expanded to include ready-mix.

A small processing plant has been erected by Western Chemical & Manufacturing Company at the site of the Oregon Asbestos mine near Mt. Vernon in Grant County, Oreg. The property has produced intermittently since 1915.

Stock Authorization Given For American Cement Co.

Issuance of a new class of stock has been approved by stockholders of American Cement Company. Out of a total authorized 150,000 shares, 60,000 shares of the new stock (Class A cumulative preferred 6.25 percent series) will be sold to pay for a part of a $12,000,000 financing program.

Necessity for this financing had been aggravated by the drain on working capital created by income tax assessments, according to statements made by the company. The firm's tax liabilities result from new rulings on depletion allowance deductions which had been in dispute for several years.

General Portland Cement Co., Chicago, Ill., is establishing the main office of its Peninsular Division at Fort Wayne, Ind. G. J. Cox, sales director of the district office at Jackson, Mich., will be sales director at Fort Wayne.

FARRELL-CHEEK

ALLOY CAST STEEL MINE CAR WHEELS AND HIGH PERFORMANCE PARTS

Essential parts for every quarrying operation, cast from finest carbon and alloy steels.

Wheels and Rollers • Sheaves and Wire Rope Fittings • Chain, Sprockets and Buckets . . .

MADE OF F 85 ALLOY CAST STEEL

Far from ordinary, these highly specialized mine car wheels, electric furnace cast of F85 alloy steel, are establishing new performance and service life records. A Brinell of 350-400 is provided on treads and flanges with a high degree of ductible toughness in hubs and webs.

You'll want complete information on all F-C wheels and parts for quarrying. WRITE TODAY!

Finest Name in Cast Steel!

FARRELL-CHEEK STEEL CO.

102 LANE STREET, SANDUSKY, OHIO

"FOUNDRYMEN FOR OVER FIFTY YEARS"

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BARBER-GREENES PLAY KEY ROLE ON 47 BIG DAM JOBS

Barber-Greene belt conveyor systems were used on 47 big dam jobs for such diverse materials handling applications as moving a mountain at 3,600 tph, aggregate stockpiling and reclaiming, and getting peak production out of aggregate and concrete mixing plants at the site.

Big contracting firms and big contractor combines selected Barber-Greenes for 12 TVA dams and 35 other dam projects scattered through 18 states for many reasons, including the one of prime importance: Barber-Greene belt conveyors move bulk materials at lowest cost per ton.

Get proof by asking your Barber-Greene representative for a belt conveyor system layout and quote on your next job.

Your belt conveyor equipment headquarters

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

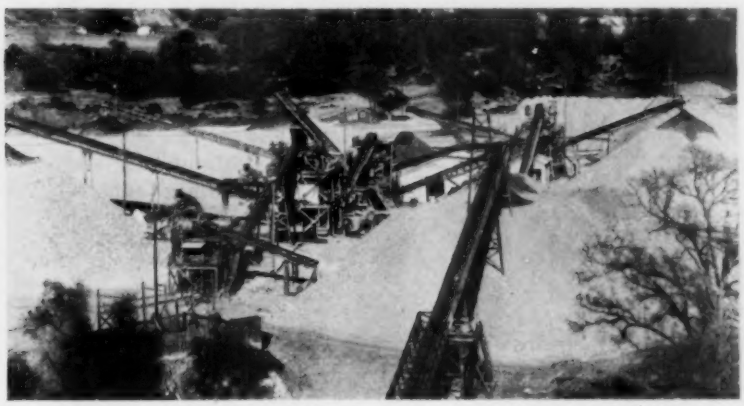
CONVEYORS • LOADERS • DITCHERS
ASPHALT PAVING EQUIPMENT

11 MILLION TONS OF EARTH FILL RIDES DOWN A MOUNTAIN AT TRINITY DAM

Two miles of belt conveyors equipped with over 2,600 Barber-Greene heavy-duty idlers moved 11 million tons of earth fill down a mountain at capacities ranging up to 3,600 tph during construction of Trinity Dam in northern California.

About half of this system ran on a 25% downgrade, and the weight of the material on the belts was harnessed to provide electric power for a portion of this big project.

Although they operated virtually around the clock for three years, the idlers were in excellent condition upon completion of the project and will be sold for re-use on other installations.



1,100,000 YDS. OF CONCRETE IN MASSIVE FOLSOM DAM

Barber-Greene belt conveyors played a dual role at Folsom Dam: nearly 1,100 ft of conveyors moved materials at the 700 tph aggregate plant shown; and five flights of conveyors were in use at the concrete mixing plant where 1,100,000 cu. yds. of mix was produced for this gigantic structure.

5,659-FT. OF BARBER-GREENES AT WORK ON $107,955,000 GLEN CANYON DAM PROJECT

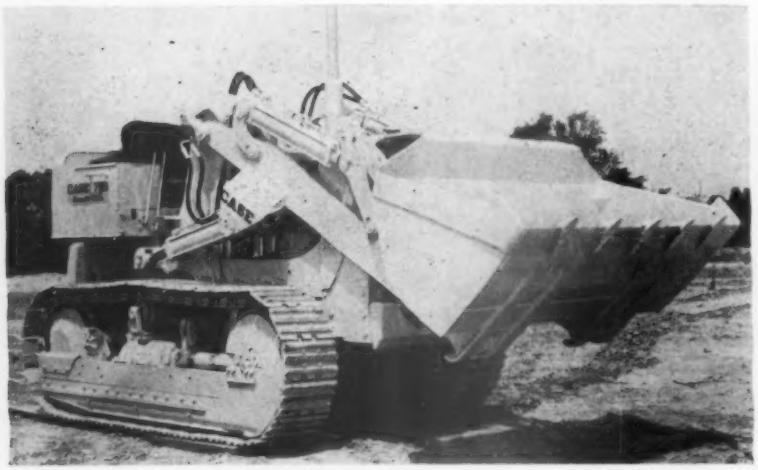
More than a mile of Barber-Greene belt conveyors are at work on the $107,955,000 Glen Canyon Dam project scheduled for completion in 1965. The contractor uses these conveyors in the 1,400 tph aggregate plant as well as for aggregate stockpiling and moving aggregates to the mixer in the concrete mixing plant. This project, located on the Colorado River on the Arizona-Utah border, is the largest contract ever awarded by the Bureau of Reclamation, and is the biggest competitive contract ever awarded to a single contractor.

EXTENDIBLE BARBER-GREENE CONVEYOR SPEEDS SPILLWAY TUNNELING AT OAHE DAM

As boring machines cut spillway tunnels on the Oahe Dam project, extendible Barber-Greene belt conveyors carried the rock away from the cutters at 640 tph. The conveyor system totalled 2,056 ft on this dam located on the Missouri River near Pierre, S.D.

Enter 56 on card, page 207

new machinery

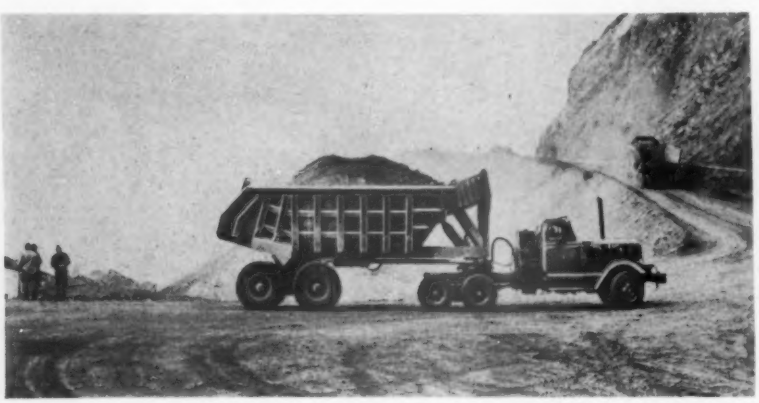


● The new 750 Crawler tractor is being produced by the J. I. Case Company. Case reports it is designed for power, maneuverability, ease of operation, and versatility.

The 750 has a 301-cu. in. Case built diesel engine, is equipped with the Terromatic transmission and a "load-sensing" torque converter that produces up to 23,000-lbs. push-pull effort. The unit is equipped with power shifting, power steering, and independent power control of each track.

Other features of the 750 Crawler include finger tip pressure hydraulic controls, self-lubricating lower track rollers, easy accessibility to oil and fuel filters and the electrical system, plus the introduction of a concept of servicing with simple hand tools. Specifications available. **(350)**

● Challenge-Cook Bros., Inc., manufacturers of construction hauling equipment have recently developed a semi-trailer for pit and quarry work capable of pay-loads up to 70-ton capacity. This model is of heavy plate body construction and is equipped with 100,000-lb. capacity off-highway axles and suspension. It has reinforced "ribbed" sides and a 70-ton triple hoist provides fast, safe dumping. It may be used with choice of conventional tractor of sufficient power. **(351)**



● A new, one-man, self propelled, hydraulically operated Model H. D. "Hi-Vacuum" rotary drilling rig has been built by the Houston Tool Company. It operates on a 30-h.p., 4-cylinder, air-cooled engine with four speeds forward and one reverse; is hydraulically steered; and designed for maneuverability. The rig has a tongue and hitch. The hydraulic system is made inoperative (neutralized) by a single valve for easy highway towing.

Carrying all of its own equipment and tools, plus 250 ft. of drill pipe, the unit is self-sustaining. Twin, clear plastic tubes provide a continuous examination of the stratum being drilled and make grab samples easy without interrupting drilling. By use of a plastic bag interliner, inch-by-inch samples may be taken and retained for analysis.

According to Houston Tool, in addition to vacuum drilling (which requires no water in dry formations, takes a 100 percent continuous sample, does not lose circulation even in broken and fissured formations) the Model H.D. 250-S drills with forced air; with forced water; with reverse water; vacuum with water; drive core sampling; augering; diamond core drilling with vacuum, with forced water; bucket drilling; and can also drive casing while drilling.

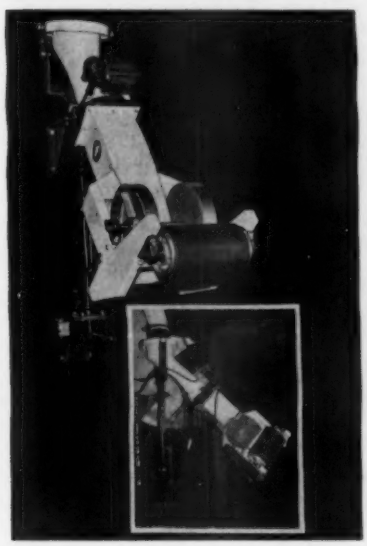
The manufacturer reports this versatile drill is rated 2⅜-in. to 3-in. dia. hole to 250 ft., and drills any angle or formation. **(352)**

and equipment

for further information use card on page 207

● Finco Flinger centrifugal action box car loader manufactured by Finco, Inc., will handle up to 2¼-in. lump size dry material with capacities up to 120 t.p.h.

In operation, twin aluminum cast discs hold the edges of a short high-speed rubber belt to form the carrying trough. The momentum of material dropped from the spout is increased to the speed of the concave belt surface as they travel together. Centrifugal action flings material 25 to 40 ft. as the belt flexes around its aluminum head pulley. Method of feed and type and weight of material causes variance in distance material is flung. The flinger is manufacturer in four styles and nine models.

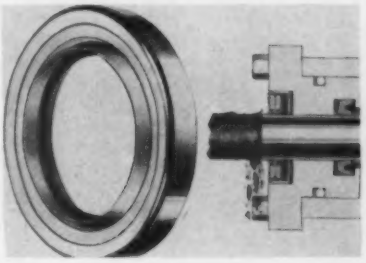


Among features indicated by Finco, Inc. for ease and safety of operation of the unit are: push button discharge direction control, hydraulic up and down positioner for chute angle and height, positive safe locking action by caliper position locking plate, rapid belt replacement (bottom of Flinger is hinged to permit rapid removal of worn belt), aluminum alloy discs and pulleys reduce weight at discharge point, and one man operation. (353)

A rod wiper and a rod scraper have been combined into a single unit by Chicago Rawhide Manufacturing Co.

The "SC Wiper Scraper Seal" provides protection for packings on reciprocating shafts and hydraulic cylinders exposed to heavy dirt conditions.

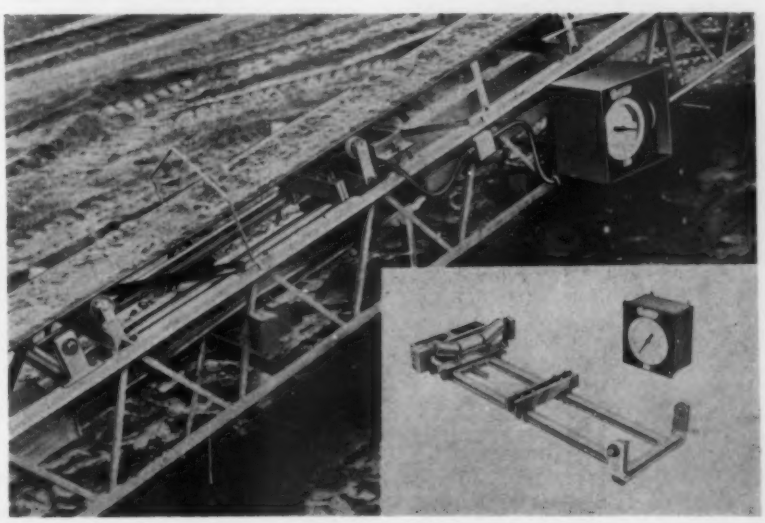
During field tests the scraper removed frozen or caked mud, tar, and other materials firmly stuck to the rod, thereby prolonging packing life, protecting bore finishes, reducing equipment downtime. (354)



● A new conveyor scale which automatically weighs, measures, meters, and/or controls the flow of bulk materials on conveyor belts has recently been introduced by Ramsey Engineering Company. Called "Vey-R-Weigh" the manufacturer reports it is designed for control applications in any operation where any type of bulk materials is transported on any type of conveyor gallery.

The unit is adaptable to many measurement, control, and recording operations such as a continuous product inventory, rationing, or blending of additives, segregation control, bulk destiny determination, grade or assay determination, or the control of feed rates to processing equipment. Various types of controls can be provided for remote recording by tape or punch-card readout.

Vey-R-Weigh consists of a conveyor mounted idler supported carriage installed to support one idler in the conveyor which weighs the belt and material carried on that idler, and a remote indicating and recording instrument which may be mounted in any convenient location up to 500 ft. from the carriage. Convenient adjustments for zero and calibration are contained within the instrument, and a range of full scale capacities from 8.6 to 250 lb. per ft. of belt is available for standard models. (355)



● With the introduction of the Model 42 and the Model 60, two new end dump models, LeTourneau-Westinghouse Company's Haulpak line now covers the size range for off-highway haulers, from the 22-ton to the 60-ton truck.

By utilizing extra high yield strength steels, and fabricated units in construction, this truck weight of the Model 60 is kept at 33 tons and is capable of hauling a pay-load almost twice its weight.

It is powered with a 550 hp. Cummins, V-12 Model VT12-700 Turbo-charged Diesel engine, and Allison CLBT - 5940 Torqmatic transmission with 6 speeds forward. Top speed is 46.6 m.p.h.

The L-W Model 42 Haulpak Truck is powered with a 430 hp. Cummins, V-8, Model VT8-430 Turbocharged engine and the 6-speed Allison CLBT-5940 transmission. Top speed is 47.7 m.p.h.

Among the components of the Haulpak line is the "Hydrair" suspension with four big pistons to absorb shock. The steering system is protected above or within the frame, giving the truck maximum ground clearance. Power steering, power brakes, and the short wheel base enhance the safety and maneuverability of the Haulpak.

Deep V-body construction lowers the load and center of gravity, improving stability.

To keep wet, cold material from sticking to the surface of the body, heat from hot exhaust gases circulates around the body through hollow box-section supports, with outlets in the rear. (356)

● Le Roi Division, Westinghouse Air Brake Company, presents a new line of mechanical drive rotary drills designated the LRD-2 and the LRD-3. These units are truck, crawler, or wheel mounted for rotary or down-the-hole drilling.

The LRD-2, a one-man rig, drills a 3 to 4½-in. hole with rotary or down-the-hole tools to a depth of 25 ft. without changing pipe. Holes to 100-ft. depth can be drilled by adding drill pipe.

For down-the-hole drilling the rotary table can be raised 16 in. This saves drilling time in hard rock formations and permits down-the-hole tools to be inserted without drilling a preliminary hole with a rotary bit. Up to 10,000 lb. of down pressure is applied on the bit by the LDR-2 hydraulic chain pulldown which automatically adjusts to the formation being drilled with a predetermined weight setting.

The LRD-3, a 6 to 7⅜-in. drill, transmits power from the engine through the sub-drive case and transmission to the drive shaft. An 18 to 1 ratio with the transmission in low gear is translated to the kelly with a 7 to 1 reduction through a right angle drive case. A torque of 9,000 lbs./ft. can thus be exerted on the bit before a spring steel washer disengages the safety clutch.

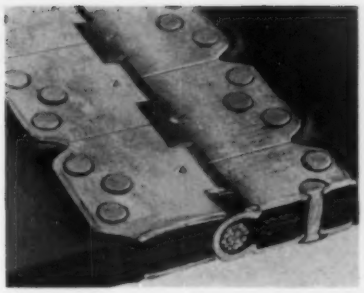
Power from the drive shaft is transmitted to the drill string through a patented 3-fluted kelly and a top gear case. Top drive permits the operator to add pipe to the string from the drill pipe magazine without coming out of the hole. A 2-speed chain driven drum hoist on the rig loads the magazine using a hoisting plug threaded to the drill pipe.

The rig is equipped with a special breakout mechanism and pipe tongs. The steel drill-pipe magazine carries four lengths of 20-ft. pipe which can be hydraulically selected and positioned over the hole.

Tri-cone bits can be used for rotary drilling and down-the-hole tools are provided for extremely hard rock. (357)

● A custom-engineered hydraulic oil designed to help insure peak performance from hydraulic systems, even under extreme operating conditions, has been developed by Lubrication Engineers, Inc.

According to the company, the product "LE Brand Hydraulic Oil," possesses three characteristics which contribute to better system operation. Maintenance of proper operating viscosity over a wide temperature range (through the use of quality, 100 percent selected paraffin base stocks); extra-high film strength to resist extreme pressures prevalent in hydraulic systems—thus eliminating excessive wear of moving parts; and a naturally high resistance to heat, oxidation and foaming, plus the addition of anti-oxidation and anti-foam agents to further insure protection against internal damage. (358)



● Conveyor installations using belts manufactured entirely of an interwoven carcass may be spliced with a new reversible belt splice made by General Splice Corporation, and designed for quick installation. The heavy-duty "Minet" Splice can be installed in one piece. As the conveyor operates, the hinge plate separates into sections at pre-scored notches to conform with conveyor trough curvature.

The hinge-type splice with heavy-duty, reusable cable pin, is engineered to go smoothly around small diameter pulleys and to make adding and removing belt sections a simple operation. The Minet Splice is now available from stock for belts from 1/32 in. to 1 in. thick and up to 72 in. wide. (359)

● A new line of moisture-resistant multiwall shipping sacks with polyethylene and paper construction has been announced by the Chase Bag Company. Named the Poly-Ply Multiwall, the bags feature a multiwall structure that includes a separate, intermediate ply of lightweight sheet polyethylene, spot-pasted at top and bottom to adjacent layers of heavy-duty kraft paper. The polyethylene film is not next to the product so it is protected from abrasion and other injuries from the bag contents as well as from the outside.

The manufacturer reports that features of the sheet polyethylene are great moisture resistance, also flexibility—even at very low temperatures. The bag was originally developed for the Morton Salt Company as a container for salt shipments. Chase reports that after more than six months of testing under commercial conditions, Morton officials have reported highly satisfactory results. (360)

Austin plastic connectors provide a quick fuse hook-up. Simply thread fuse from shot hole through length of connector and press trunk line into grooved slots. Then return branch line through end of connector on other side of trunk line and pull tight.

AUSTIN
Detonating Fuse

promotes blasting efficiency

Filled with a high explosive core, Austin Detonating Fuse possesses sufficient strength and speed to initiate an entire column of explosives . . . connects all holes with an effective detonating agent.

Austin Detonating Fuse is easy to handle, too. It's light in weight and flexible with a tough, waterproof coating that won't crack, chip or peel when being laid.

3 types—There's a type of Austin Detonating Fuse for virtually any purpose. Type 60 is standard. Type 100 is more powerful and for less sensitive explosives and blasting agents. Type 175 is for use with uncoated ammonium nitrates.

All 3 types are insensitive to shock, abrasion and strong electrical currents.

AA-9674

USED IN 1833 AUSTIN & EVER SINCE

AUSTIN
POWDER COMPANY
CLEVELAND 13, OHIO

explosives ◆ ammonium nitrates ◆ primers ◆ detonating fuse
permissibles ◆ blasting supplies ◆ AP drill heads and bits ◆ mine tools

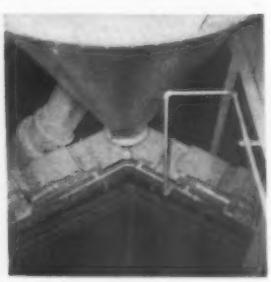
Enter 61 on card, page 207

HANDLING COSTS GO DOWN

WITH PNEUMATIC BULK SYSTEMS

Shown above is a Bulk Cement distribution facility for rail and/or truck loading and unloading, engineered, designed and constructed by Halliburton.

Halliburton Pneumatic Trailer with two 350 cu. ft. tanks.



Air Troughs, open or closed type, with pneumatic control gates operated from remote locations.

Halliburton engineered pneumatic "Floating Warehouse" bulk material barge facility — 8,750 bbl. bulk cement load capacity.

If it's dry . . . if it's bulk
if it's here and you want it there . . . Halliburton Pneumatic Bulk Handling Systems can move it faster and cleaner than any mechanical conveyor.

Halliburton Pneumatic Systems operate on the proven simplicity of low air pressure. With them, you can convey most any powdered — and many granular materials *anywhere you can run a pipe.*

In addition to in-plant handling systems, Halliburton can provide Pneumatic equipment for bulk materials handling by any conveyance — road, rail, or marine.

Call for a visit from a Halliburton man. He can help you lower the cost of handling dry bulk materials *. . . pneumatically!*

Over 35 years experience
of handling more than
500,000,000 cu. ft. of materials

SPECIAL PRODUCTS DIVISION

Halliburton
COMPANY · DUNCAN, OKLAHOMA

● A front-end loader attachment with 1¼- cu. yd. capacity is now being offered for the Kwik-Mix Hi-Lifter by Kwik-Mix Company, a division of Koehring Company. The attachment digs 94-in. wide, has 8½-ft. dumping height, 40-deg. bucket roll back at ground level, 50-deg. at dumping height, and 9,000-lb. breakout force. Maximum lifting capacity is 8,500 lb.

The manufacturer reports one of the outstanding features of the Hi-Lifter front-end loader is that the front-end operating mechanism pivots ahead of the operator, providing maximum safety, and giving the operator top visibility in spotting and controlling the bucket.

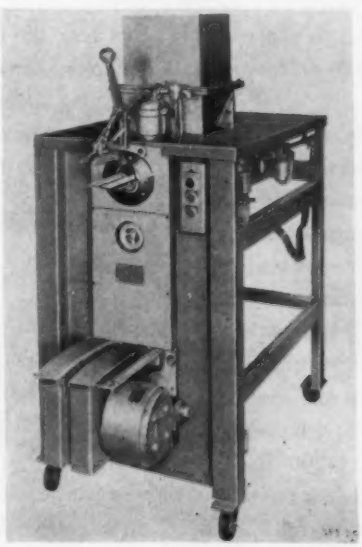
Stressing versatility, Kwik-Mix lists the following attachments now available with the Hi-Lifter: standard fork lift able to lift 4,000 lb. to 22½ ft.; pallet fork able to lift 3,000 lb. to 35 ft.; vertical clamp arms for stacked lumber; crane hook; two sizes of concrete hoppers; and a material transfer bucket. (361)

● The E. D. Codington Mfg. Co. has developed a new bag shaker for use on either their Auger-Matic of Air-Pak valve bag packers.

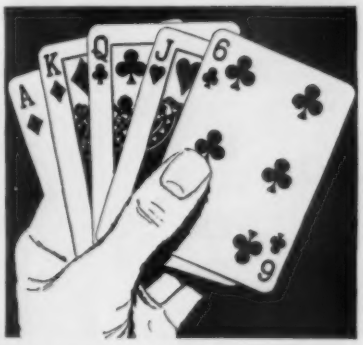
This accessory which consists of two shaker arms powered by a small built-in electric motor causes a reciprocal motion of the arms in contact with the bottom of the bag. This agitation of the bag throughout the entire filling operation causes the material to settle quickly into its most compact form, thereby assuring the use of minimum size bags, often bringing about savings in bag costs.

The shaker is attached to the front panel on the scale of either packer and a counterweight is provided to compensate for scale balance. It can be adjusted to accomodate bags of various lengths.

The bag shaker starts and stops automatically as the packer is operated. (362)



POKER? Play to win!



How would you play this hand?

Don't let the high cards tempt you. This is no better than drawing to an inside straight (odds about 12 to 1 against filling). Fold...fast...and patiently wait for a good hand.

Here's a sure winner from FORD:

Ford pays half your fuel bills for a full six months (or 400 tractor hours) on the purchase of any new Ford or Fordson diesel tractor.

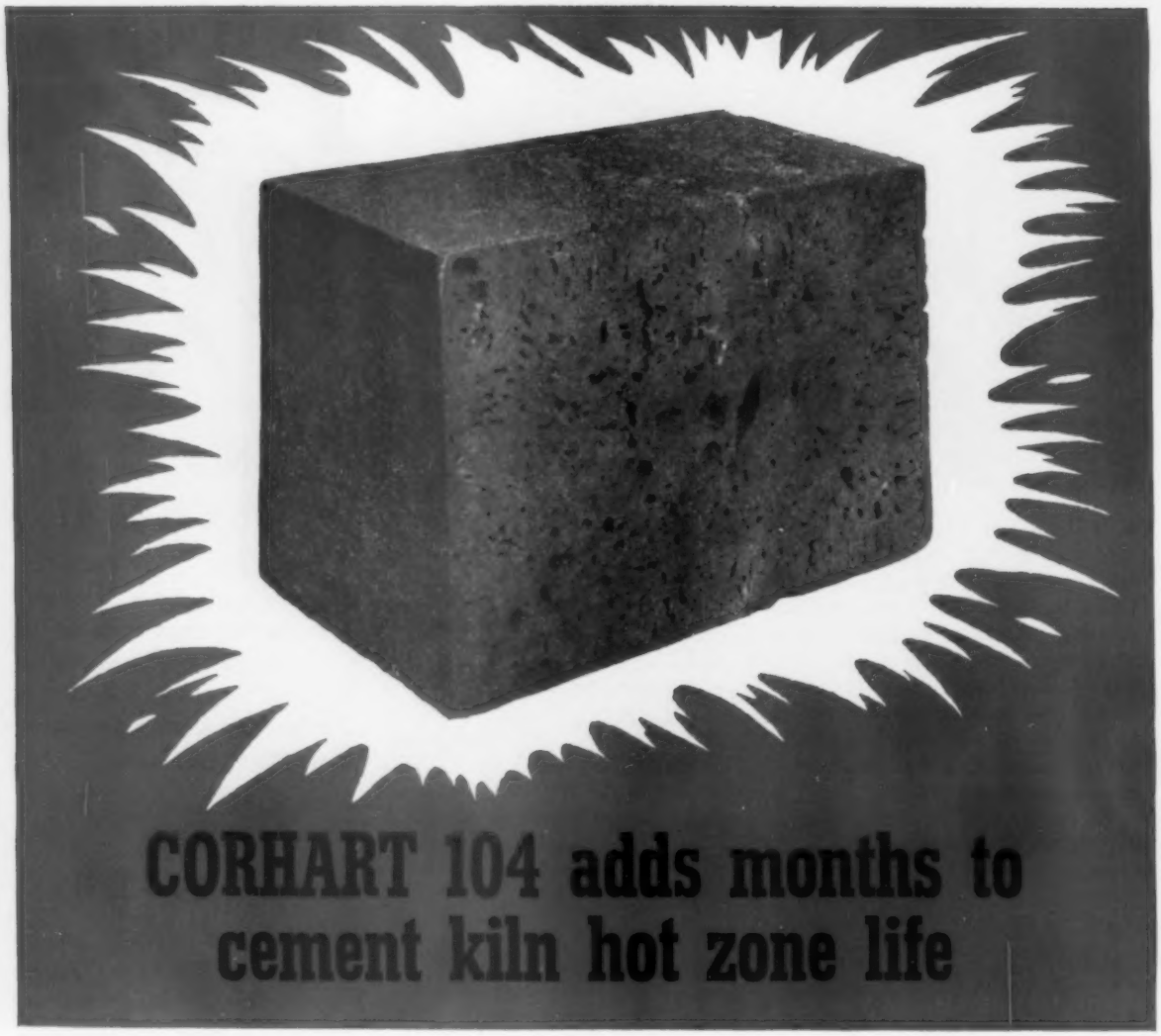
This offer, made possible by the amazing fuel-saving performance of these low-priced diesel tractors, expires March 31, 1961.

No "hidden" price increase... no tricks of any kind. See your Ford Tractor Dealer for all the money-saving details!

Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan

Ford TRACTORS EQUIPMENT

Enter 63 on card, page 207



CORHART 104 adds months to cement kiln hot zone life

THIS refractory is conventional in shape and dimensions, but different—*much different*—in all other characteristics.

In many respects, Corhart 104 is as tough as the diamonds we saw it with. It is chemically inert to all forms of cement clinker, including high alkali types. It attracts and stubbornly clings-to a uniform clinker coating through cold shutdowns and subsequent start-ups. Corhart 104 is far more dense and impermeable than *any* bonded basic brick.

Corhart 104 is formed by melting carefully controlled amounts of chrome ore and sea-water magnesite in an electric furnace at temperatures exceeding 4500°F. It *freezes* at 4200°F. The result is a rugged interlocking crystalline refractory structure with a 1000°F "margin for error" . . . and twice the life of conventional basic refractories.

Corhart 104 is being used extensively to balance hot zone life in cement, dolomite and other types of rotary kilns. Write for more details on this outstanding hot zone refractory: Corhart Refractories Company, Incorporated, 946 Commonwealth Bldg., Louisville 2, Kentucky.

CORHART PROVES IT IN THE HOT SPOTS!

QUALITY ECONOMY ENDURANCE

CORHART REFRACTORIES COMPANY

Subsidiary of Corning Glass Works

The words "Corhart", "ZAC", and "Electrocast" are registered trade marks which indicate manufacture by Corhart Refractories Company, Incorporated.

NEED A TAILORED CONVEYOR SYSTEM?

If you're the man who must make the decision on a materials-handling system, you've got a big job on your hands—whether it's a large system or small. You'll decide on design, construction and equipment—and you'll live with it for years.

One call to your Rex Engineer will help make sure your system is tailored specifically to your needs—that it speaks well for you by providing the most efficient operation, lowest maintenance cost and maximum freedom from down time.

Your Rex Man adds over 70 years' experience to your planning team—for he brings you the 70 years' experience of CHAIN Belt Company in solving countless bulk materials handling problems just like yours.

Complete Rex line assures a tailored system. Your Rex Man also offers you the industry's most complete line of equipment: conveyors—apron, belt, drag chain, and vibrating; bucket elevators; feeders—apron, belt, reciprocating plate, rotary table, and vibrating. So, he is free to recommend a system that meets your needs.

Call your local Rex Engineer when he can be most helpful—at the planning stage. CHAIN Belt Company, 4604 W. Greenfield Ave., Milwaukee 1, Wis. In Canada: Rex Chainbelt (Canada) Ltd., Toronto and Montreal.

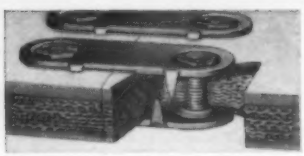
REX®
CHAIN BELT COMPANY

A call to CHAIN Belt adds a man to your staff, but not to your payroll

BELT INSTALLATION MEN LIKE TO WORK WITH...

FLEXCO® BELT FASTENERS

Lowell Lynde, Service Engr., Barber-Greene Co. completing the installation of a FLEXCO splice.



Cutaway of a FLEXCO application showing the compression plates, teeth and precision-made bolts and nuts.

He says, "I've spliced most of the belts our Chicago office has sold throughout Illinois and northern Indiana. FLEXCO fasteners have been used on all of them without any trouble. They are easy to install and hold up well regardless of the material conveyed."

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS WITH FLEXCO . . . the quality fastener for all heavy-duty conveyor belt applications: COAL & METALS, SAND & GRAVEL, CRUSHED ROCK, CONSTRUCTION EQUIPMENT, etc.

Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

FLEXCO "25-PAK"

"25-PAK" contains enough fasteners to join common belt widths.

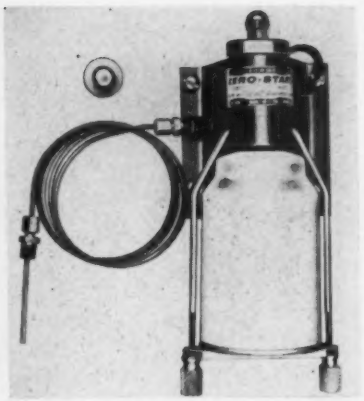
ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Flexible STEEL LACING COMPANY

4623 LEXINGTON STREET • CHICAGO 44, ILLINOIS

Enter 66 on card, page 207



● Phillips Manufacturing Company announces a new model "Zero Start" ether base diesel and/or gasoline engine starting fluid injector, Model E700. Standard aerosol starting fluid cans fit the E700 and can be quickly changed.

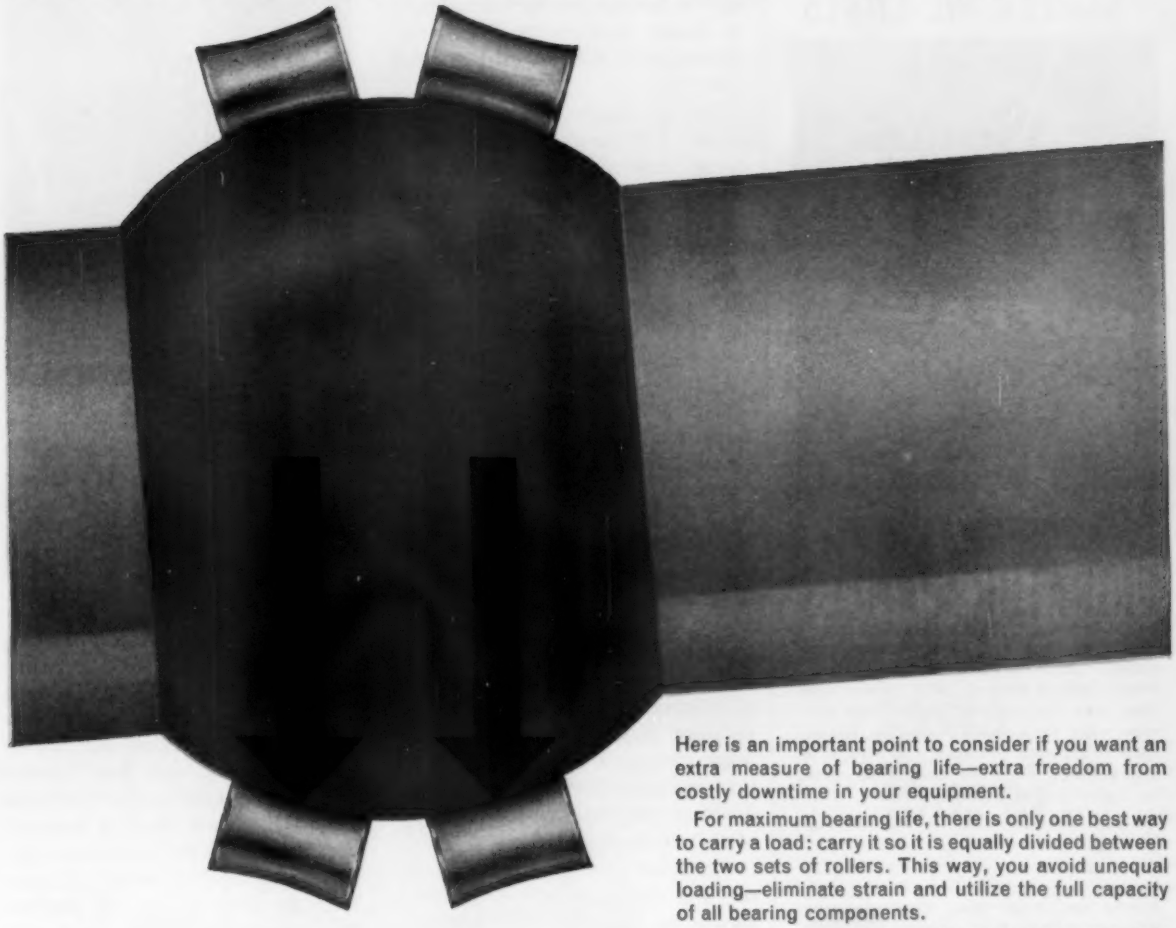
The unit is electrically operated by a dashboard-mounted, push-button control which activates an electric solenoid that releases the starting fluid into the intake manifold. The amount of starting fluid released can be regulated by a simple solenoid adjustment. The Model E700 is adaptable to 6, 12 or 24 volts. **(363)**

● The Whitmore Manufacturing Company is producing a new lubricant for freeing tight, rusted, or seized parts. Whitmore's new "Mechanics Thread Loosener (Easy Spray)" is packaged in a 16-oz. push-button aerosol container for fast, easy application.

The non-gumming product quickly penetrates rust and corrosion to free tight or rusted pins, linkage hinges, nuts, bolts, valves, and other seized parts.

The manufacturer states it is recommended for all climatic conditions, even in salt atmospheres. A free trial can of the product is available. **(364)**

ELIMINATES MISALIGNMENT STRAIN



maintains

equal load distribution

despite

changing misalignment

Here is an important point to consider if you want an extra measure of bearing life—extra freedom from costly downtime in your equipment.

For maximum bearing life, there is only one best way to carry a load: carry it so it is equally divided between the two sets of rollers. This way, you avoid unequal loading—eliminate strain and utilize the full capacity of all bearing components.

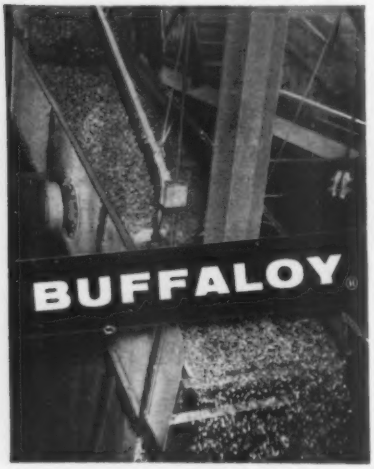
With Shafer-Rex design, misalignment is eliminated before it reaches the rollers. So, despite shaft misalignment, the load in a Shafer-Rex is always aligned and equally divided on the rollers—providing extra protection against the strain of any punishment that might be dished out.

Original Shafer-Rex design is the reason. The inner race of a Shafer-Rex Self-Aligning Roller Bearing is a segment of a sphere; rollers are concave. With this design, the only part affected by misalignment is the inner race. Roller assemblies remain in the aligned position, carry the load equally to assure uniform loading through the center of each roller—a real lifesaver.

For information, write: CHAIN Belt Company, 4604 W. Greenfield Ave., Milwaukee 1, Wis. In Canada: Rex Chainbelt (Canada) Ltd., Toronto and Montreal.

SHAFER® REX® SELF-ALIGNING ROLLER BEARINGS

SURE WAY TO CUT
SCREENING COSTS



anti-abrasive
VIBRATOR PANELS

You'll be time and money ahead with Buffalo Anti-Abrasive Screens. Woven from a special formula, high carbon steel wire, here are superior panels that provide many extra hours of service. Resistance to abrasion and ability to cope with heavy shock loads are unequalled, even by higher priced panels.

Long experienced in serving the mineral aggregates industry, Buffalo Wire Works possesses the necessary skills to produce a wide selection of weaves and mesh sizes, with virtually any type of edging, for meeting your needs precisely.

You'll want the whole story in New Bulletin 600P. Write.

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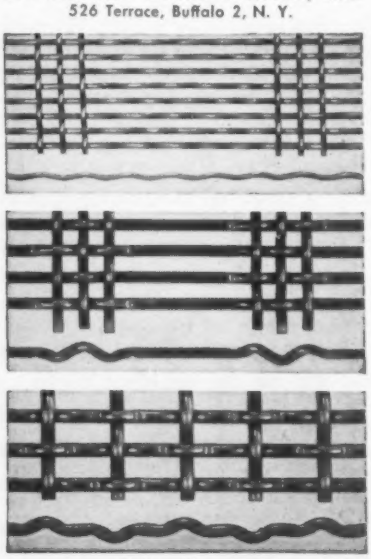

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● A new industrial process potentiometer described as "revolutionary" in concept has been introduced by Brown Instruments Division of Minneapolis-Honeywell Regulator Company.

The new device, called the "ElectroniK 17" incorporates a "Stranducer" unit which utilizes an electro-mechanical strain gage as the rebalancing element instead of the conventional slidewire. As the "heart" of the ElectroniK 17, the Stranducer varies the output potential of the measuring circuit to balance the input signal from the process variable.

The manufacturer reports additional features of the new potentiometer are as follows: Stray signal rejection—loop stray signals which have 60-cycle rms values five times greater than span will not impair the accuracy of the instrument. Voltage to ground stray of 300-v d.c. or 150-v. a.c. will not impair instrument accuracy.

Thermal stability — thermally compensated electrical networks minimize zero shift due to temperature change. One reference junction device establishes true reference junction compensation for all types of thermocouples.

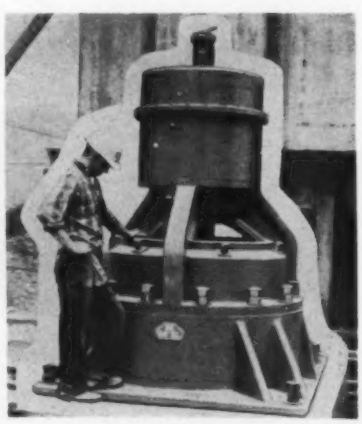
Amplifier provides critical damping and optimum instrument response for high impedance actuations. Option of transistor amplifier or vacuum tube amplifier. New miniature plug-in converter. New design contact control with a maximum of eight control potentiometers provide adjustable contact action points for strip or circular chart instrument.

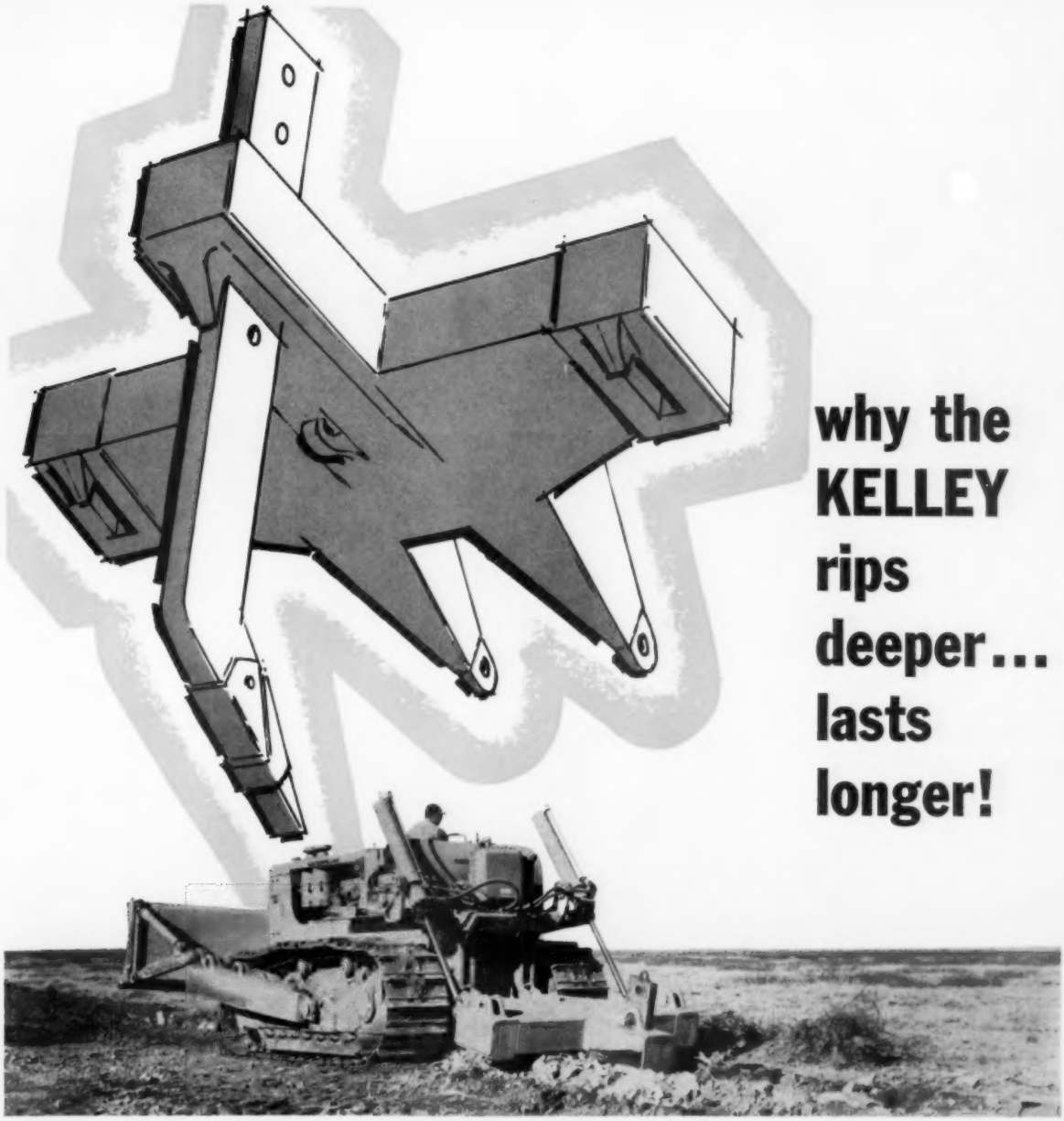
A cascaded zener diode network provides a constant current to the measuring circuit despite fluctuations in line voltage and changes in ambient temperature. This eliminates the need for periodic standardization. Initial production of the potentiometer will consist of a single pen strip and circular chart recorders and a circular scale indicator, each with or without control.

Each module is a complete interchangeable assembly or sub-assembly. The ElectroniK 17 can be converted from a strip chart instrument to circular chart or a circular scale instrument, merely by changing the display module.

Pictured are James S. Locke, vice-president, and J. A. Robinson, divisional sales manager of the Brown Instruments Division, inspecting the Stranducer of the ElectroniK 17. (365)

● Kennedy Van Saun is producing a new, completely hydraulic reduction crusher called the Kone-O-Matic for which the manufacturer reports advantages in secondary and tertiary operations. The unit has a lower feed opening and requires less head room. The main shaft is top-supported by multiple hydraulic cylinders. The crusher setting is automatically held in the set position by, "posi-trol," said to be a new and exclusive control device; varying setting is a one-hand operation. Crusher automatically rejects tramp iron without damage and returns at once to correct setting. The drive is gearless, lubrication is pressurized, and bowl liner and mantle are precision machined for zinc-less installation. (366)





why the KELLEY rips deeper... lasts longer!

■ There are rippers, then there's the *Kelley Ripper*. Where others talk about 72-inch penetration, the Kelley goes down *84 inches*. Where others talk about saving cents per yard or ton, the Kelley saves *dollars*. ■ The difference is the extra strength built into the Kelley Ripper. The massive tool beam is cast high-alloy steel, ruggedly reinforced. The 3½-inch thick, 14-inch wide shank is of special alloy steel, heat-treated for resistance to wear and shock-loads. Tractor power is concentrated on the ripper tooth for maximum material breakage with minimum shank load. Seven-inch cylinders, with 2⅝-inch rams, keep the tooth at the desired depth. ■ Compare ordinary rippers with the Kelley *Extra Heavy Duty* Ripper — for Cat D9, D8 or D7 Tractors.

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5767

EXPLOSIVES

ENERGY...

vs. Mechanical Energy

Cheaper blasting materials and improved drilling equipment have reduced the cost of explosives energy to the point where it is doing work formerly reserved for mechanical equipment. By putting more of this low-cost explosives energy to work, machinery operates more efficiently, costs are lowered all along the line.

Smart, profit-minded operators are taking a closer look at the cost of mechanical energy vs. explosives energy and they are coming up with important savings in machinery, manpower, and time—for example:

In coal stripping, explosives force is used to move up to 50% of the overburden directly on to the spoil pile. Mechanical handling costs are reduced, and coal is uncovered more rapidly.

In open pit ore mining, explosives factors are being designed to gain additional fragmentation. Much of the material by-passes the primary crusher. Production is speeded, overall costs lowered.

In quarrying and construction, operators are finding it no longer pays to blast rock just hard enough for equipment to handle it. They are taking advantage of lower drilling and blasting costs to gain more fragmentation and displacement. And in the process they are making important savings in wear on crushers, dipper teeth, wire rope, and truck bodies. They are reducing operating costs, eliminating production delays.

The economics of drilling and blasting have changed. Looking for ways to reduce blasting costs alone is not enough. The real savings come when you look at explosives energy as a way to reduce overall operating costs.

For a closer look at some of the ways explosives energy can lower your costs all along the line, look to Atlas' full line—the only full line in the industry. Expanded plant facilities are now in production at Joplin, Missouri to assure ready availability of all products. And to give you faster, more flexible local service, new distribution facilities are being established coast to coast. Call in your Atlas Representative. His experience with the newest advances in explosives, blasting agents, and blasting techniques can help you measure the relative economy of explosives energy vs. mechanical energy in your operation.

ATLAS POWDER COMPANY
Explosives Division · Wilmington, Del.

ATLAS **ATLAS EXPLOSIVES**

← *Using explosives energy to cast overburden to spoil pile at a large Midwest coal stripping.*

IF THE JOB CALLS FOR A SINGLE ROLL --PENNSYLVANIA'S GOT IT

Only Pennsylvania offers you this range of Single Roll Crushers —permitting precise job-engineering of the exact machine for your application.

Pennsylvania Single Rolls furnish the most economical, efficient reduction method you can get for primary and secondary crushing of a wide variety of materials—including cement rock, gypsum, limestone, mine refuse, barytes and other friable ores, shale, slag, chemicals and phosphate rock.

Combining a slow speed operation with high capacities (up to 1200 TPH), all models feature *extremely low maintenance and operating costs.*

Pennsylvania Single Rolls require very little headroom, can be choke fed, and will handle wet, sticky or frozen feeds without showing noticeable decrease in capacity.

FREE BULLETINS

Write for Pennsylvania Single Roll Bulletins, fully describing the many design features, operating advantages and application information on these famous "work horses."

PENNSYLVANIA CRUSHER DIVISION
BATH IRON WORKS CORPORATION
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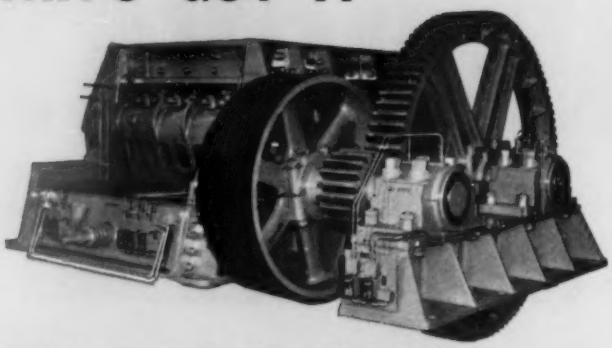
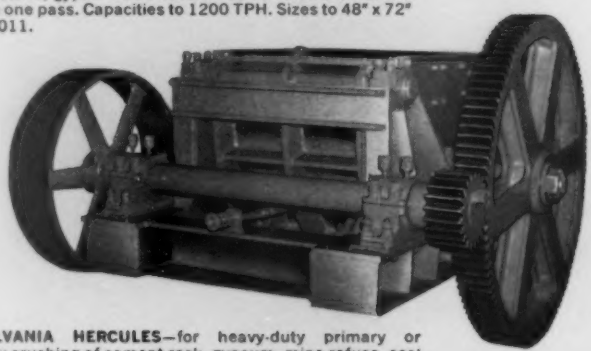
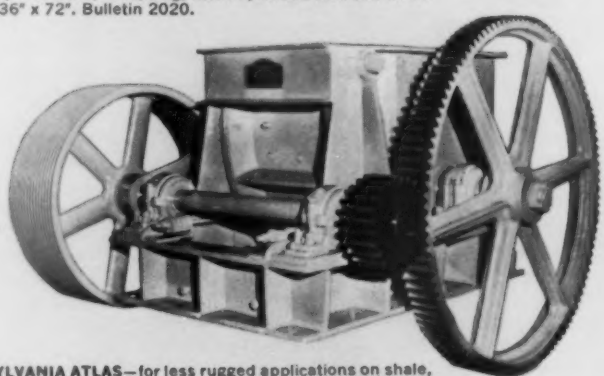


PENNLEHIGH—recommended for primary crushing of cement rock, limestone, gypsum and other friables to a nominal 6-8" product in one pass. Capacities to 1200 TPH. Sizes to 48" x 72" Bulletin 2011.



PENNSYLVANIA HERCULES—for heavy-duty primary or secondary crushing of cement rock, gypsum, mine refuse, coal with rock, limestone, ores, slag, etc. Capacities to 1200 TPH. Sizes to 36" x 72". Bulletin 2020.



PENNSYLVANIA ATLAS—for less rugged applications on shale, slate, coal, fire clay, soft gypsum, soft limestone, chemicals, etc. Capacities to 660 TPH. Sizes to 30" x 60". Bulletin 2025.

PENNSYLVANIA
BATH-BUILT
CRUSHERS

Washington News Letter

(*Concluded from page* 11.)

lation that they would certainly vote for it when it came before the House. and at the same time they would rely on the Rules Committee to see to it that the opportunity to vote on it would never occur.

Now, the proponents of "reform" argue, such promises will have to be redeemed. The likelihood is that popular legislation will receive far larger majorities than the vote on the change in the Rules Committee.

Shortly after the vote on the House Rules Committee most of the old Washington hands leaned to the former view—that Congress will exercise restraints. That view now appears to be changing; an increasing number are voicing confidence in the belief that the President is likely to get most of his legislative program through Congress, with only such compromise as he was originally prepared to accept. The presumed *savoir-faire* of the Administration is already becoming an established legend; and people are beginning to ask which features of the proposed legislation have been put in for the specific purpose of having something to compromise away while leaving the essential features unchanged.

Much of the current confidence results from the observation that, somehow, this Administration has developed a technique for snatching the appearance of overwhelming victory out of the jaws of near defeat.

N.L.A. Issues New Bulletin On Lime in Asphalt Paving

The National Lime Association has published Bulletin 325, *Hydrated Lime in Asphalt Paving,* which relates how lime improves hot asphalt mixes. Lime serves as a stabilizing chemical additive which not only fills voids but also imparts strength, stability and waterproofing qualities.

As in soil stabilization, lime upgrades marginal pit-run materials into high-quality hot mix aggregates. Generally, only small amounts of lime are required (1-2%).

Single copies of the 16-page bulletin are available free from the National Lime Association, Washington 5, D. C.

which armor shields the knight? which, the churl?

From outward appearances here sit two brave knights. But, don't let appearances fool you, for covered by one suit of armor is a churl who would turn his back and flee at the sight of hostile charger.

It is easy to be fooled by products, too. For instance, often competitive replacement parts for crushers, shovels and tractors look identical. Yet, the product of one manufacturer will outwork the competitive product two or three to one.

There is, however, one way you can be sure the replacement parts you buy produce maximum work per dollar invested . . . order job-designed Armor-Tough Columbia manganese steel replacement parts. Don't take our word for it. Order Columbia Armor-Tough parts. Compare them with the parts you have been using, and you, like all who have made the test, will, in the future, order only Columbia Armor-Tough components.

Read what one Columbia customer says. Send for FREE Field Report No. 504.

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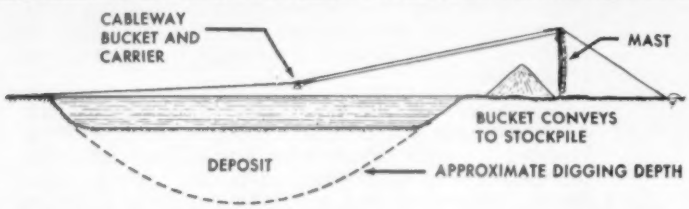
The Best Method for Digging Under Water is a Sauerman Slackline Cableway

... R. W. Bisett, Pres., Olean Gravel, Inc.



A Sauerman Slackline Cableway has been excavating material for Olean Gravel, Inc. since 1930. The 1½-yd. bucket has an operating span of 1200 ft., with an average haul of 900 ft. Depth of the pit is approximately 85 ft.

Due to the long haul and digging depth, Olean uses shovels at the shore line to supplement the Slackline and maintain the 200-tph. capacity of their new plant. Mr. R. W. Bisett, President, states:

"No one has yet come up with a better way of getting material from below the water line than Sauerman."

During freezing winter months when the plant is not operating, the Slackline Cableway is kept running to build a stockpile of material. A 110-ft. mast permits building the pile to a height of about 75 ft. All digging, elevating, conveying and dumping operations are handled by the hoist operator. Gravity return of the bucket to the excavation completes the fast operating cycle.

Where long range excavation or deep digging is required, it pays to use a Slackline Cableway. Contact Sauerman for specific recommendations on your job. Catalog C, *Slackline Cableways*, gives more information on this materials handling method.

SAUERMAN BROS., INC. 634 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

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Labor Developments

(*Concluded from page* 13.)

ones will end, how long it will take to end them, and what price will have to be paid for their discontinuance.

Along the same lines, the President has already announced, certainly with agreement of the new Secretary of Labor and probably at his suggestion, that he will appoint both labor and management representatives to an advisory committee. One of the duties of this committee will be to prepare recommendations for increasing productivity in order to be able to meet foreign competition more effectively. Here, again, the matter of restrictive practices will receive much attention. Some of the most hallowed traditions will be weighed in terms of their contribution to the nation's welfare. In the struggle to maintain a high level of employment and economic growth, their possible discontinuance will, no doubt, become one of the issues on which the Administration will have to take a stand.

Labor leaders are worried because the President means what he said about the need for sacrifice; and they fear that they and their constituents may be among the first called upon. The Administration's dilemma is that, politically, this course would be unwise, unless similar sacrifices were required from other segments of the population.

The anticipation of this trend accounts for the fact that the Administration is pressing for measures to cushion the impact of unemployment, to solve the problems of depressed areas, and to provide for the retraining and placement of displaced workers elsewhere in industry. It regards these as efforts that must be undertaken before facing the larger problems. In the view of Administration leaders, if they should be blocked in these programs, their chances of securing acceptance of programs designed to solve the larger problem of lagging productivity will be seriously hampered.

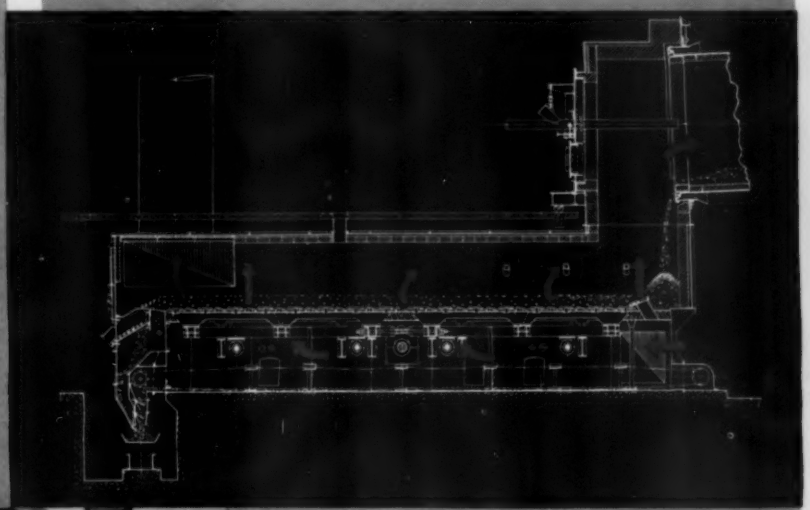
Early in its career, this Administration may face a serious challenge from one of its principal supporters. Who will prevail may determine its future rate of progress and that of the nation.

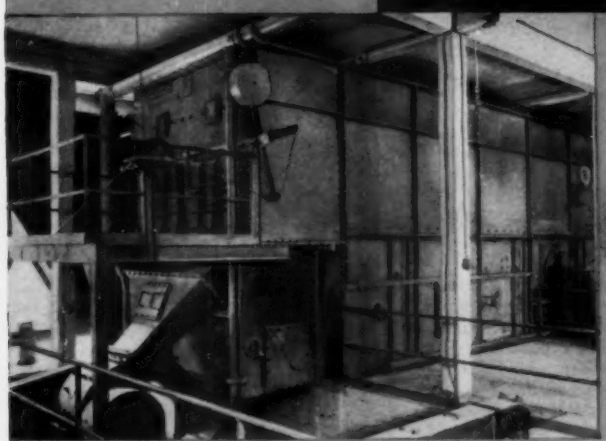
Smidth

FOLAX

HORIZONTAL GRATE COOLER

FOR CEMENT CLINKER





First Folax Horizontal Grate Cooler installed in 1947. Thoroughly proven design—more than 160 Folax Coolers sold and in operation.

- Extra heavy construction.
- Efficient cooling to low temperatures.
- Bulletin No. FC1059 on request.

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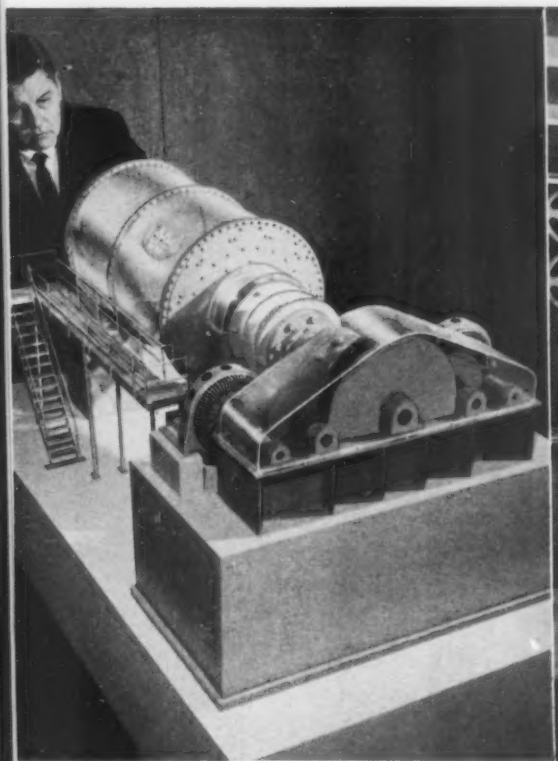
ideas and news:



Latest step in mill trunnion drive evolution: New Twinducer drive divides mill load electrically, between twin synchronous motors. Compared to trunnion drives with mechanically divided load, the Twinducer drive requires 50% less space. Since there are no floating gears or pinions, gear wear is kept to a minimum. Twinducer drive fits any plans for automatic grinding operation.

For quality control . . . lower processing costs: Systemation engineers help you benefit from the degree and type of automatic operation most suited to your needs. Allis-Chalmers will undertake responsibility for the design of complete operating facilities. Systemation service is based on a thorough understanding of your processing requirements, gained from years as a process designer and major equipment supplier to your industry. Added is the experience of over 500 successful advanced electronic control systems by Consolidated Systems Corporation, an affiliate company.

Which of these productive ideas could be working for you?

A pump that defies wear. A high-voltage motor control center. These examples demonstrate the extra value that is standard with Allis-Chalmers...the greater efficiency and the added productivity which are yours when you buy A-C products, systems and services. Call your Allis-Chalmers representative for details on A-C "worth-more" features. Or write Allis-Chalmers, Industrial Equipment Division, 905 S. 70th Street, Milwaukee 1, Wisconsin.

Systemation is an Allis-Chalmers servicemark. *Twinducer, Ripl-Flo, SpaceMaker, Pyro-Shield* and *Shelter-Clad* are Allis-Chalmers trademarks.

420,000 tons of sand pumped . . . no major repairs: This A-C rubber-lined pump, in service almost five years, pumps rod mill discharge to sand screws for classification. It replaced an alloy metal pump which failed after pumping 10,000 tons. The alloy pump replaced a standard metal pump which failed after 4,000 tons. Only $840 or about 2 mills per ton has been spent for repairs.

High output — low installation costs: One of the world's largest aggregate-handling screens met the needs of an aggregate producer for higher output and minimum installation costs. This 7 by 20-ft Ripl-Flo screen handles 600 tons per hour and is mounted on foundations previously used for a 5-ft screen.

So low, two fit where one used to go: This new SpaceMaker control center is the first completely new 2- to 5-kv motor controller development in more than a decade. Two-high design can cut floor space needs in half. Full drawout construction makes it the safest, most easily accessible controller available. Flame-retardent, track-resistant Super Pyro-Shield insulation adds reliability. Walk-in Shelter-Clad enclosures available for outdoors.

A-C INDUSTRIAL EQUIPMENT DIVISION: motors, generators, controls, rectifiers, pumps, compressors, crushers, mills, screens, kilns, coolers, industrial systems.

OTHER A-C PRODUCTS: thermal, hydro and atomic electrical generating equipment; switchgear, transformers, unit substations; tractors, earth-moving equipment, engines, lift trucks. A-1402

ALLIS-CHALMERS

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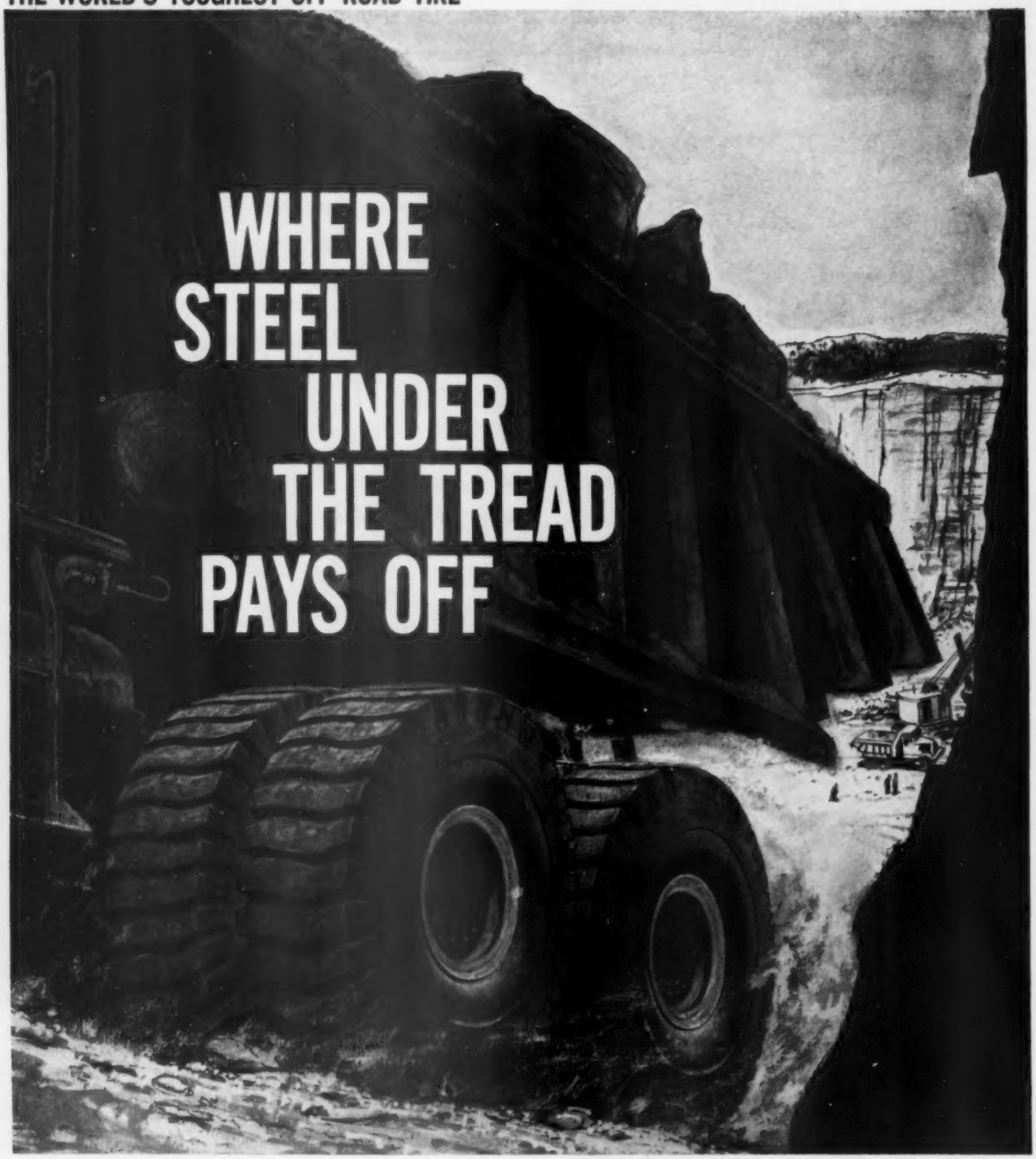
THE WORLD'S TOUGHEST OFF-ROAD TIRE



U. S. ROYAL SUPER CON-TRAK-TOR S.R.T.* Deeper tread at center and shoulders—steel reinforced for "chain-mail" resistance to cuts and impact failures • Each brass-coated steel filament is rubber insulated—can't rust out • Double-strength nylon cord body • More durable carcass • More tires retreadable • Prove-test them on your present equipment, specify them for your new equipment. Call your U. S. ROYAL DEALER.

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The Editor's Page

Fringe Benefits and Employer-Employee Relations

AN OLD saying has it that nothing is sure except death and taxes. A third certainty is that the growing volume of fringe benefits given to employees will continue to grow. According to a nationwide survey made by the U.S. Chamber of Commerce, fringe benefit payments to employees in 1959 averaged 22.8 percent of payroll among more than 1,000 representative companies. Continuing studies of over 100 companies show that fringe benefits increased from 14.7 percent of payroll in 1947 to 23.8 percent in 1957 and 24.6 percent in 1959. Payments in 1959 including vacations, holidays, and rest periods constituted almost one-half of total fringe benefits. The balance consisted mainly of pensions, Social Security, etc.

The practice of giving fringe benefits started many years ago, when a few individual employers voluntarily tendered them to employees, expecting to achieve better relations with them and perhaps greater productivity, lower turnover, etc. Since that time organized labor has constantly made fringe demands, and has got them; the government has enacted many compulsory benefits, and companies have vied with each other in giving others. These benefits include Social Security, unemployment and workmen's compensation; sickness, accident, hospitalization and death benefits; old-age and survivors' insurance; off-the-job disability insurance; terminal pay; discounts on goods purchased; free meals; pensions; savings and stock purchase plans; paid vacations, holidays, and rest and lunch periods; profit-sharing and bonus arrangements.

AS THESE benefits have grown, adding more and more to labor costs, employees have, to an increasing extent, ceased to regard them as a part of the wage-and-salary schedule. Fringe pay, while gladly accepted or even demanded by employees, is not easily visualized by them, because it is not tangible, like take-home pay. There is also considerable misunderstanding of the cost of such benefits to employers. Because a part of some types of benefits are tax-deductible, many workers assume that they cost the employer nothing. The fact that the benefits received by the employee are not taxable only seems to strengthen this belief.

An employer must keep his employees informed of the actual and complete facts about their relationship, if he is to receive credit instead of blame for what he is doing for them. This could be done by an annual statement showing the facts the employee is most interested in, including profits, taxes, and fringe benefit expenses—with an explanation of the amount of fringe benefit that is not paid for by tax savings.

BECAUSE we feel that all employers should be familiar with the various types of fringe benefits now available, we are now publishing a series of articles on this subject (beginning with the January, 1961, issue). These cover group life insurance and hospitalization, accidental death and dismemberment insurance, major medical and surgical expense insurance, long term disability insurance, estate planning, and retirement plans. Some of these plans can be most advantageously purchased through group participation, but others can be handled by almost any size of company for all or certain groups of employees.

The emphasis in Washington now is on universal, compulsory government tax-financed medical care for the aged. It will eventually include all similar plans unless industry provides them first.

Walter E. Trauffer

Industry Report

By the Editors of Pit and Quarry

PART I *of our report, starting here, covers general association business, and broad subjects of industry-wide interest . . . the balance of the report is in*

PART II . . . *starting on page 84 . . . in which discussions of specific industry problems are considered in detail . . .*

N.S.G.A. holds 45th annual convention

Locale and program spur large attendance

*Part I:

THE consistently high quality of the National Sand and Gravel Association convention programs gained further respect from the association's members attending the group's 45th annual meeting. Held at the Hotel Americana, Bal Harbour, Miami Beach, Fla., in conjunction with the 30th annual convention of the National Ready Mixed Concrete Association, the meeting drew a combined attendance of about 2,000 members and guests equalling the record for a non-exhibit year.

Distribution of the comprehensive program prior to the convention stimulated heavy advance registration of members who were looking for pointers on every phase of the industry, from management to research. General pleasure in the locale for these business sessions led to plans for returning for a future meeting.

In this convention report we are continuing a procedure that was initiated last year for the benefit of our readers. The material immediately below, Part I of the report, is concerned primarily with subjects of generally broad scope and also with association business. In the section following, Part II, the reader will find detailed discussions of the many specific topics covered in the various sessions. They have been categorized into management, operating, etc., to provide quick reference to material of particular individual reader interest.

President's Address In his final address as president of N.S.G.A., Edward K. Davison (J. K. Davison & Bro., Pittsburgh, Pa.) briefly reviewed conditions in the sand and gravel industry and prospects for the future. Production in 1960 did not quite reach the all-time record high of 1959 but in 1961 is expected to resume the steady upward trend so long in evidence. This prediction is based on statements from three authoritative statistical sources predicting increased construction volume for 1961 over 1960. Rises are predicted in new construction, construction contract awards, and heavy construction volume. Many reasons were cited for excellent long-range prospects.

- N.S.G.A. has had a good year in spite of a decrease in membership due to consolidations and mergers. There are now 248 active member-companies in the United States, five in Canada, one in Australia, one in New Zealand, and one in the West Indies. There are 104 associate members in the Manufacturers' Division.

In discussing association activities, Mr. Davison stressed the im-

A joint luncheon meeting of the N.S.G.A. and N.R.M.C.A. boards of directors was held on the opening day of the convention.

portant work being done by the executive and engineering division, the very popular annual short course on concrete and aggregates, the work done on legal and tax matters, the very successful controllers conference (which will be repeated in 1961), plans for a management conference, and the preparation of safety manuals for employers and employees in both industries, etc.

The top officers of N.S.G.A. are Harold E. Bender, secretary-treasurer (Azusa Rock & Sand Co., Azusa, Calif.); E. K. Davison, president (J. K. Davison & Bros., Pittsburgh, Pa.); and Fred P. Curtis, vice-president (Lyman-Richey Sand & Gravel Corp., Omaha, Nebr.).

Elections All officers of N.S.G.A. were re-elected for a second year. They are: president, Edward K. Davison (J. K. Davison & Bro., Pittsburgh, Pa.); vice-president, Fred P. Curtis (Lyman-Richey Sand and Gravel Corp., Omaha, Nebr.); and secretary - treasurer, Harold E. Bender (Azusa Rock and Sand Co., Azusa, Calif.). Charles M. Everhart (Cumberland River Sand & Gravel Co.) is the new member of the executive committee.

New members of the board of directors are: Linden H. Chandler (Chandler's Palos Verdes Sand and Gravel Co.); Steve M. Click Jr. (Louisville Sand & Gravel Co.); Peter B. Dunning (Dunning Sand & Stone Co.); Milton C. Evans (Becker County Sand & Gravel

Officers of the Manufacturers Division include (front, l. to r.): J. F. Dorfler (Clark Equipment Co.), a new director; Emil Deister Jr. (Deister Machine Co.), retiring chairman of the division; John E. Dunn (Allis-Chalmers Mfg Co.), new chairman; and Harry F. Lawrence (W. S. Tyler Co.), vice-chairman. Rear: A. J. Vincent (The C. S. Johnson Co.), a new board member; Ken Coleville Jr. (Hendrick Manufacturing Co.), a new board member; H. J. Knudten (Universal Engineering Corp.), vice-chairman; K. F. Lange (Link-Belt Co.), vice-chairman; and John S. Carr (American Manganese Steel Div., American Brake Shoe Co.), vice-chairman.

A highlight of the joint luncheon meeting was the presentation of awards to J. L. Shiely, left (chairman, Guaranteed Concrete Co., St. Paul, Minn.); and H. G. Feraud, right (executive secretary, Southern California Rock Products Assn.). The awards were presented by John B. Donovan, center (Valentine Concrete Co., Springfield, Mass.), president of N.R.M.C.A., in recognition of their distinguished service to the associations.

The progress of the highway program thus far is an impressive testimony to the efforts of the planners, builders, and material producers on the highway team, said Pyke Johnson, chairman of the Highway Research Board.

Co.); Charles S. Gooding (Whittaker & Gooding Co.); A. R. Kinney (Mount Vernon Sand and Gravel Co., Inc.); and Robert M. Mumma (Pennsylvania Supply Co.).

New members-at-large: Charles E. Brady (B. V. Hedrick Gravel & Sand Co.); Irving Crown (Material Service Division); George W. Garrett (Stewart Sand & Material Co.); Col. H. H. Haas (Houdaille Construction Materials, Inc.); and L. Edward Lee (The Fordyce Co.).

Coming Meetings The 1962 joint annual conventions of the National Sand and Gravel Association and the National Ready Mixed Concrete Association and their combined biennial equipment show will be held February 5 to 9 at the Conrad Hilton Hotel and McCormick Place (formerly known as the Chicago Exposition Center), Chicago, Ill. It is planned to hold all meetings at McCormick Place except those of committees, directors, etc. There are adequate meeting rooms, excellent restaurants, a cafeteria, and all other required facilities. There is ample exhibit space capable of handling the heaviest of equipment.

The 1963 joint conventions will be held at the Fairmont Hotel, San Francisco, Calif., February 11 to 14. The 1964 joint conventions and machinery show will again be held at McCormick Place in Chicago. The 1965 joint conventions had been tentatively scheduled for New York City, but it was decided to hold these again at The Americana, Miami Beach, Fla.

The 1961 semi-annual meetings of the two boards of directors will be held August 20 to 24 at The Greenbrier, White Sulphur Springs, W. Va. The executive committee and other committees will meet on Monday, August 21—the N.S.G.A. board on Tuesday, and the N.R.M.C.A. board on Wednesday; and on Thursday there will be a joint meeting of the two boards.

The 1962 meetings will be held September 30 to October 4 at The Broadmoor, Colorado Springs, Colo. The 1963 board meetings will be held early in October in Bermuda at a hotel yet to be selected. In 1964 they will be at The Camelback, Phoenix, Ariz., late in October.

Manufacturers Division The new chairman of the Manufacturers Division of N.S.G.A. is John E. Dunn (Allis-Chalmers Manufacturing Co.), who succeeds Emil Deister Jr. (Deister Machine Co.). The new vice-chairmen are: John S. Carr (American Manganese Steel Division, American Brake Shoe Co.); and Kennard F. Lange (Link-Belt Co.).

New members of the board of directors are: Ken Coleville Jr. (Hendrick Manufacturing Co.); J. F. Dorfler (Clark Equipment Co.); and A. J. Vincent (The C. S. Johnson Co.). Representing the Manufacturers Division on the N.S.G.A. board of directors are: Messrs. Dunn and Deister and Harry F. Lawrence (W. S. Tyler Co.).

Safety Contest A feature of these annual conventions is always the presentation of trophies to the winners of the two safety contests. Those for the N.S.G.A. contest are provided by *Rock Products* and those for the N.R.M.C.A. contest by MODERN CONCRETE. The winners of the 1960 N.S.G.A. contest were:

Class A—more than 500 tons—Consolidated Rock Products Co., Irwindale Plant, Los Angeles, Calif.

Class B—200,000 to 500,000 tons—Gifford-Hill & Co., Inc., Kinder Plant, Dallas, Tex.

Class C—less than 200,000 tons—St. Catherine Gravel Co., land plant, Natchez, Miss.

Certificates of Achievement in Safety, provided by the U. S. Bureau of Mines, were awarded to the 142 plants, including the above, which had accident-free records during the year. In 1960 a total of 19 plants had completed five consecutive accident-free years.

Highway Program Why do we need roads? The answer is fundamental said Pyke Johnson, chairman, Highway Research Board. The development of the motor vehicle and consequent freedom of mass movement has led to new ways of living and new ways of making a living. Time has re-

placed distance as the measure of movement.

Urban renewals, dispersion of homes and industry, even growing cultural pursuits, have all contributed to the expansion of the economy—which depends on adequate roads. Further, one out of six businesses is related to highway transportation, and one out of seven workers gets his living in this field.

Men on the highway planning, engineering, and construction team have done a yeoman job, it was pointed out. More than half of the 41,000 Interstate miles have been opened to traffic, are under construction or contract, or in the engineering stage. In addition, about 112,000 miles of the ABC system have been completed.

● What are the problems ahead? Money. Mr. Johnson indicated that about $10 billion more is required to keep the program on schedule. This does not stem from poor planning, but from the fact that original estimates were made hurriedly to get the program underway. The present set of estimates has been carefully developed, and serious variation is not expected in the future.

● Where is the money coming from? If the emergency gas tax increase provided last year is allowed to lapse, it will have to be replaced. Actually, it should be increased another half cent to provide the full $10 billion needed. Mr. Johnson feels that the general public would object least to a levy of this type since it could see the obvious benefits in the mileage of roads already completed.

Outlook for the Industries In reviewing the *Outlook for Our Industries* (sand and gravel, cement, concrete), Cris Dobbins (president, Ideal Cement Co.) indicated that in his opinion the prospects for the future could be thus stated briefly: for the long range—good; for the short range—slow during the first half of this year but improving during the second half, resulting in an over-all better year than the one just past.

For cement, Mr. Dobbins said, the two largest markets are highways and nonresidental structures, each representing about one-fourth of total cement consumption.

An appraisal of future effects of the highway program must await action in the present session of Congress, the speaker said. Additional funds for the Interstate Highway Program were made available late last year—resulting in a big backlog of contracts that should have a big effect on construction this year.

● Nevertheless, it must be recognized that the impressive mileage constructed already cannot be matched in the future if adequate financing is not forthcoming, and that as a result the present 1972 completion date may have to be extended.

The outlook for these industries is good, according to Cris Dobbins, president, Ideal Cement Co., who indicated that an improvement in the construction picture may be expected.

Concrete has traditionally played a large role in structural and nonresidential construction, it was pointed out, and in view of new methods and techinques, we can expect even greater use in the future.

● Several technological developments are broadening the market for concrete, Mr. Dobbins reported, including shell roof construction, prestressed concrete (ten years ago there wasn't a single prestressing plant in the country—today there are more than 300), ultimate strength design, precast structural and architectural units, and slipform paving.

Progress in the improved use and application of concrete, with its ingredients, will not be slowed due to a shortage of cement. One thing is certain, Mr. Dobbins said—there will be no cement shortage this year, nor for many years to come. According to the best estimates, there is at least 430 million bbl. of productive capacity.

Joint Luncheon The featured speaker at the annual joint luncheon was originally to have been Governor Luther M. Hodges of North Carolina, but he had to cancel out because of commitments involved in his new position as Secretary of Commerce in President Kennedy's cabinet. In his place, Mr. Ahearn gave his always popular *Washington Scene*.

Another feature was the presentation of special awards of merit to H. G. Feraud, executive secretary, Southern California Rock Products Association, and J. L. Shiely, chairman, Guaranteed Concrete Company. Mr. Feraud was the originator of the annual conference on operation of state and area associations, which has become an important part of these conventions. Mr. Shiely was a pioneer member of N.S.G.A. and its third president.

Guests of honor at the luncheon were Col. E. H. Peirce, chairman of the Sand and Gravel Association of Great Britain and managing director of Hall & Co., and W. H. Wylie, of the Transportation Co., Ltd., Glasgow, Scotland, also a sand and gravel producer.

Washington Report In his annual report on the Washington scene, Vincent P. Ahearn, managing director of the two associations, reviewed the results of the recent elections. Mr. Nixon's own decision to engage in a series of television debates with Mr. Kennedy had some bearing and was made probably because of criticism from a hostile press. The greater activity of the Democratic party workers and of labor unions in getting out the vote was also a factor. Lack of cooperation between those conducting Mr. Nixon's campaign and the Republican National Committee undoubtedly had some influence.

● Mr. Kennedy won the election largely through his own perseverance and energy and that of the youthful, aggressive and dedicated group who worked for his cause. As president he will, Mr. Ahearn believes, exert these qualities to the fullest in an effort to give this nation a strong leadership at a critical moment in its history.

Turn page for PART II ☛

45th ANNUAL N.S.G.A. CONVENTION continued . . . .

*Part II:

** For the convenience of readers whose primary interests lie in particular areas of the many subjects covered throughout the convention, we have assembled the various specific topics here in PART II. They are presented under general categories, such as:* MANAGEMENT, OPERATING, LABOR, ENGINEERING, *etc. Under these primary headings will be found discussions of pertinent individual factors.*

★ MANAGEMENT

Industry Problems The principal problems of the sand and gravel industry, according to Joseph L. Shiely Jr. (J. L. Shiely Co.) are:

1. Its stake in the economic survival of our country
2. Its management and lack of understanding of some economic facts of life
3. Its seeming indifference to public relations
4. Its slow progress in developing and accepting new production techniques

With respect to the first item, Mr. Shiely feels that one cannot insulate this industry from the others which make up our vast industrial complex. A majority of our people, however, feel that Uncle Sam has endless funds to give away, and that no matter what happens he will bail us out. He urged aggregate producers to become actively interested in seeing that the public is better informed before further inflation does more serious damage to our economy and our world status.

Referring to management in this industry, Mr. Shiely believes that some educational process must be implemented to maintain and develop qualified men for these jobs. This is a difficult task because, individually, most producing companies are small business, and their heads are not usually trained for the jobs they hold. The association's Controller Conferences, he said, are developing some top fiscal experts, and the short courses are raising the technical educational level of the personnel. Similar training in other phases of business such as tax matters, pricing in relationship to cost, labor problems etc., is badly needed.

● In its public relations, the sand and gravel industry is about as popular as a skunk at a garden party, said Mr. Shiely. The established industry is bad enough in this respect, but the marginal operators and the contractors operating portable or temporary plants are even worse. The association has done an outstanding job with its 250 members, but the thousands of other operators are not in any way exposed to its public relations program. Those other operations, he said, must get this message, or regulation and enforcement may be necessary to correct unfavorable conditions.

● The industry's slow progress in developing and accepting new production techniques is a delicate one, according to Mr. Shiely, largely because existing tax laws make it difficult to finance necessary improvements. As his own company's operations have grown, the production techniques have remained substantially the same, and the major economies have been obtained through the use of larger equipment units. What is needed is more research, both basic and applied, both on a national and local level.

Budgeting and Forecasting The need for a more reliable look into the future is a must for even the smallest producer, according to A. J. Selzer (Concrete Supply Co.). Such forecasting helps to forestall adverse events from actually occurring and makes it possible to improve the predicted favorable results. A complete structure of financial forecasts and budgets includes:

1. Annual sales forecast and budget by units
2. Income and operating profit forecast and budget
3. Expense budgets for all production, delivery, selling and administrative departments
4. Forecast of taxable income, state and federal income taxes and net income
5. Long-term sales forecasts to estimate growth of corporation
6. Forecast of cash receipts and disbursements
7. Forecast of capital asset acquisitions
8. Forecast of balance sheet items

● The sales forecast, said Mr. Selzer, is obviously the most important, and in its preparation the use and projection of past experience is valuable. Data collected must be adjusted for seasonal variation. Monthly figures are then plotted on a graph and a curve is drawn. This information should also be correlated with other data including:

1. Value of building permits in your own county
2. Number of total residential units constructed in your marketing area
3. Area total units sold per trade association — in time the N.R.M.C.A. Operating Cost Ratios will be more useful
4. Total construction awards in your own area, as well as the country

In projecting a long-term trend, the construction industry nationwide, which is one of our most significant barometers, should be plotted on the same chart with its own unit sales.

A second method is to determine the future buying intentions of customers and the amount they plan to buy. Mr. Selzer believes a blending of these two methods is most accurate; but one must also keep up with general national forecasts, gross

national product, and other statistics.

The production superintendent should provide estimates of expenditures anticipated, as should other department heads; and a good accounting system is also needed. A chart showing the budget and the actual departmental expenditures helps visualize the big picture. The periodic analysis each department head is required to make is a valuable byproduct. The forecast and budget, Mr. Selzer stated in conclusion, make it possible to look further into the future and formulate decisions in an orderly and economical manner.

Profits, Growth According to S. M. Berman (Booz, Allen & Hamilton), there has been a fairly consistent trend in steadily diminishing profit margins since 1950. At the same time, industry as a whole is operating in an economic environment that paradoxically reflects a growth in sales.

Management cannot afford to be complacent in such an environment, it was emphasized, and successful operators will recognize the need for actions that ensure profits accompanying growth.

Actions that will be taken in *Planning for Profitable Growth* will fall generally into five categories, Mr. Berman said. These are: increasing the sales price, increasing the sales volume, improving technology, reducing costs, and introducing new products.

● The latter two offer the greatest potential profit improvement, it was stated. Almost every company can benefit from a well-planned cost control program, and cost reduction can often be accomplished in a relatively short period of time. New products are also boosts to increased profits, and can be achieved through internal development or acquisition.

Electronic Data Processing *Application of Electronic Data Processing to a Sand and Gravel and Ready Mixed Concrete Operation* was the very impressive title of a paper by B. L. Bradley (T. L. Herbert & Sons). Actually, he said, this term is used rather loosely to cover a multitude of machines and systems, all offering a means to increase a man's productivity. Under present competitive conditions, it is necessary to control your business by figures, so that problem areas can be found and corrected quickly.

The type and size of machine required will depend on the size of the business, but even the smallest one can be rented at about the cost of two clerks. Purchasing is justified only if the machine is used at least 80 percent of its capacity. If properly applied, it can handle billing, accounts receivable, the cost system, and general ledger accounting.

Employee Benefit Programs *Considerations Which Should Guide Producers in Developing Employee Benefit Plans* were outlined by Henry H. Kirwin (Eastern Rock Products, Inc.). His comments will be covered only briefly here because similar information in greater detail is contained in a series of articles now being published in PIT AND QUARRY. Group insurance is easily obtained for members of the associations and is especially advantageous for small companies which could not otherwise afford it. The use of pension plans helps to overcome the fact that Social Security is unfair to the higher paid employees. The government, he said, encourages such plans tax-wise, so that a company in the 52 percent bracket pays only 48 cents per dollar for a plan which would cost an individual $2. Deferred-compensation plans are highly individual and usually require availability of the retiring person for consultation. Long-term disability plans have many benefits, and are tax free to the employee.

Rail Shipments Dying? *Sand and Gravel Transportation by Rail — Soon Only a Memory?* was the catchy but very appropriate title of an address presented by Charles E. Brady (B. V. Hendrick Gravel & Sand Co.). In 1936 all but a very few of the major sand and gravel plants shipped by rail as there was very little concentrated demand, and shipments had to be made over a wide area. The railroads were sure of most of the long-haul business and made special rates to keep the short-haul business. Now there are many more plants, but most of them are not on railroads and almost all shipment is by truck.

Braxton B. Carr, chairman, National Waterways Conference . . . . the campaign toward establishing tolls on inland waterways has intensified.

This change, said Mr. Brady, is due largely to the railroads' failure to appreciate changing conditions, especially the great post-war increase in demand which is steadily reducing the shipping areas of plants. Large-tonnage projects have encouraged the opening of new permanent, portable, or temporary plants which would not have been built if short-haul rail rates had been lower.

Waterway Users' Problems Two of the most dangerous industrial activies in terms of accident frequency and severity rates are navigation and mining. This point was made by Charles M. Everhart (Cumberland River Sand & Gravel Co., Nashville, Tenn.), presiding officer of the special session for producers using the navigable waterways. He cited the special laws covering employees in this work under maritime regulations, and pointed out that seamen are covered by a comprehensive accident and liability insurance—much more so than land labor.

Stephen A. Milwid (Lord, Bissell & Brook), an attorney with extensive experience in maritime law, called attention to the liberality of the courts in seamen injury litigation. Compounding this situation is the fact that the Federal Employees Liability Act permits seamen to sue in any city where his employer does business—consequently the suits are largely brought in locations with reputations for liberal jury action.

● How can this exposure be narrowed? For one thing, finite definitions of what a vessel is, what navigable water are, etc., should be established. Next, if an operator finds himself faced with employee injury litigation, defense should concen-

trate on three basic tests: Is the vessel involved in "navigation"? Is there a permanent connection (relationship) between the suing employee and the vessel? Is the worker himself actually involved in navigation?

Firsthand experience of several producers taking part in the discussion brought up some interesting points. Allan P. Taylor (Ohio River Sand Co., Louisville, Ky.) told of an accident involving one of the firm's dredge employees. The firm saw to it that the man had medical attention, took care of other needs, and as a result of these efforts the man signed a release. This did not stop him from filing suit later, however, and in the course of litigation the company learned that its release was worthless—the court approved the employee's claim.

Suits under the Jones Act can't be eliminated, said Arnold Sobel (Material Service Division, General Dynamics Corp., Chicago, Ill.), but they can be cut down. As an "ounce of prevention," a "hard sell" on safety programs is effective. In Mr. Sobel's organization safety is stressed constantly, and as in other firms, injured men are given top medical care from company-retained physicians.

Observance of safety precautions is the first step to undertake in solution of waterways user injury compensation problems. This was the emphatic position taken by G. O. Griffin (Dravo Corp., Pittsburgh, Pa.) and Mr. Everhart, discussion moderator. Mr. Everhart also noted that the cash safety awards instituted by his firm have been very effective.

In another area affecting waterways users, a warning was issued by Braxton Carr, chairman, National Waterways Conference. Specifically, the campaign of various interests toward establishing tolls on inland waterways has intensified.

Two bills have already been introduced in Congress toward setting up an Inland Waterway Commission for toll collection. Until last year there had been no national group representing the producer-users as there had been for the interests who wished to see the tolls established.

Although President Kennedy earlier indicated he does not favor these tolls, Mr. Carr feels that the President probably would not veto Congress on the matter.

The potential effect of these tolls, or user charges, on the waterways has brought N.S.G.A. into active opposition, according to Mr. Davison, association president, because at least 20 percent of the membership could be affected. The association's directors are preparing testimony for submission to Congress, if needed, pointing out that in their opinion water transport is only nominally competitive with other types, that proposed legislation would disrupt the market pattern of construction aggregates, and that only a nominal increase in land shipment would be experienced.

★ TAX DEVELOPMENTS

Depreciation The Treasury Department has been watching carefully those taxpayers who claim excessive depreciation amounts in an effort to convert ordinary income into capital gains income. Whether or not this gain is too large is a question, according to James R. Spear (The Dolese Co.). Creeping inflation is probably responsible for a part of this gain on a sale, particularly on an asset depreciated over a long period of years.

Many methods of calculating depreciation can be used, said Mr. Spear; but the Treasury is watchful of efforts to depreciate too fast or too much, and it carefully examines the estimated useful life upon which the depreciation rate is based, and the salvage value. The Treasury will probably require taxpayers, regardless of various conditions, to use the length of time the asset is expected to be useful in their business. This could result in such a short life that some of the accelerated methods could not be used.

● The current regulations make clear that salvage value is to be estimated at the time of acquisition of the asset and is not to be changed merely because of a change in price levels. Salvage values are determined largely through the taxpayer's past policies and it is to this area, said Mr. Spear, that the Treasury is devoting much attention.

In negotiating with a revenue agent who might bring up a question regarding a deduction, it is wise not to argue the matter at the time. If the matter is important and not likely to be dropped, a producer should check all sources of information on the subject, including the Revenue Code and Regulations, a tax adviser, etc., so that he will be able properly to defend his position later, before the final report is made. Even if agreement is not reached with the agent after completion of his audit, Mr. Spear stated there are still several conference and appeal steps available.

Until further legislation is passed, said Mr. Spear, using depreciation to create capital gains will be difficult if not impossible.

Percentage Depletion Developments Legislative and judicial developments in percentage depletion were reviewed in detail by John T. Sapienza, counsel for the association, who said that 1960 was a turning point in its history because for the first time taxpayers suffered serious setbacks in Congress and in the Supreme Court. For many mining industries the consequence is drastically reduced depletion allowances, but in the sand and gravel industry, he said, the consequences may not be severe.

● Of particular importance to producers was the issuance by the Treasury Department of final regulations under Code Section 614, on the aggregation and separation of mineral interests. Publication of the regulations on January 10 started the 90-day period in which the taxpayers can make, change, or perfect elections to aggregate or separate a mineral interest for the purpose of computing the percentage depletion allowance. For the years between 1954 and 1958, taxpayers can elect either the 1954 or 1958 rules. For 1958 and later years the 1958 rules are available.

● Mr. Sapienza urged members who are interested in electing to aggregate or separate, to consult their tax advisers immediately. The manner of making an election has been made easier in the final regulations than it was in the proposed version,

but it is still a demanding procedure.

The N.S.G.A. *Blue Book* on percentage depletion, written in 1952, is now being revised and will be available to members soon.

Other Taxation Problems In discussing depreciation and other taxation problems Mr. Sapienza said that liberalization of present depreciation policies now seems probable. Steps will be taken to encourage construction and industry expansion, and one of these may be tax credit on such projects.

● Regulations on expense accounts are tough, said Mr. Sapienza, but some congressmen want them even tougher. Complete records will help to prevent trouble.

Allan P. Taylor, Ohio River Sand Co. . . . . it is becoming increasingly difficult to find deposits (river) that will provide completely clean material.

★ OPERATING SESSION

A number of topics were discussed on an informal basis in this session, and comments of producers on the panel were followed by question-and-answer periods.

Prospecting and exploration procedures followed by his firm were described by P. W. Gifford (president, Gifford-Hill & Co., Dallas, Tex.), who noted that it was a major program in the firm's operations in Texas and Louisiana. Three men are engaged in full-time exploration work, and three rotary test rigs are used for sampling. Aerial photos, water well and seismograph logs, and similar data, are used when available to round out information obtained in drilling.

● Trash removal is a significant matter in the operations of the Ohio River Sand Company, Louisville, Ky., according to A. P. Taylor, vice-president of the firm. A bucket dredge operated on the river frequently encounters a considerable quantity of coal fragments in some sections of the dredging area. In fact, it is becoming increasingly difficult to find areas that will furnish completely clean material.

To counter the problem, a rising current coal washer was installed, which, in reverse operation, removes the heavy material instead of the light. It has processed about 300 t.p.h. of material very effectively.

Specific gravities of the gravel and coal fragments were said to be 2.62 to 2.65, and 1.65, respectively. Feed to the unit is sized as received from the dredge to fall in the range of about 1½-in to 4-mesh.

● A similar trash problem was described by J. A. Heillman (Stewart Sand & Material Co., Kansas City, Mo.), in which lignite is a deleterious component of the raw material deposit. This firm installed Eagle Iron Works equipment in which a sand-water pulp of 1.70 sp. gr. has very successfully removed the lignite (1.35 sp. gr.) and finished product sand has no problem in meeting specs on lignite content.

At the processing rate of 125 t.p.h., cleaning efficiency was said to range between 93 and 97 percent, and operating cost was six cents/ton.

● Tighter specifications and depletion of quality deposits will force more and more attention on upgrading available raw materials, emphasized W. E. Hole Jr. (vice-president of Ohio operations, American Aggregates Corp., Greenville, Ohio).

In reviewing the application of jigs or heavy media separating equipment to the removal of deleterious material, Mr. Hole stated that the first step is to determine whether the objectionable material falls primarily within a particular size range of the deposit. Then the specific gravity that will remove this material should be figured, and cost figures (investment, operational, etc.) should be determined for equipment that will do the desired job.

Operating characteristics and feed ranges are primary considerations in selecting the equipment, Mr. Hole said. The band of separation specific gravities in which a particular machine will operate is important, *i.e.*, there are wide-band and narrow-band separators. On any type, he said, control over drift should be established through the feed or maintenance.

● "We are learning by our mistakes," said W. L. Price (manager of engineering and materials, Dravo Corp., Pittsburgh, Pa.), in commenting on screening problems. Some of the difficulties encountered involved brittleness of screening surfaces, abrasion, hook strips, uneven wear, and crimping.

Take a look at your scrap pile of cloth and plate, he suggested, to determine whether breakage is due to brittleness or abrasion, and then select the cloth to meet the condition. A study of screening materials made by his department established also that screen fabric which is crimped too loosely will lose proper opening sizes, and that which has been crimped too deeply leaves too much metal as waste.

A member who has had considerable experience with the situation, Ian L. Jennings (manager, Consolidated Sand & Gravel, Toronto, Ont.) described some approaches to winter operating problems.

Despite the fact that a sand and gravel washing plant cannot be operated under severe winter conditions, the growing construction activity during that period is such that his firm now ships at a rate equal to about 40 percent of that during the summer months. This means that during the latter months, production has to meet not only current demand, but also build stockpiles to handle winter demand.

Basically, the speaker said, the winter problem revolves around material handling. However, control on grading must be nearly perfect during the production season, so that winter shipments can meet specifications. Plant design must then comprehend the important factor of stockpile placement and large capacity, for two-season loading.

Two other significant factors enter the picture, Mr. Jennings pointed out. The safety problem is compounded during winter operations due to short daylight periods, and a plant must have extensive lighting to protect the men. Keeping an efficient crew is in itself another problem since skilled men who may be laid off during the winter, may not be available when the production season opens.

(Turn page)

★ RESEARCH, ENGINEERING

Research Problems The sand and gravel industry has become involved in recent years in a tug of war between opposing forces, according to Delmar L. Bloem, associate director of engineering for both associations. "Many premium deposits are being depleted while the accessibility of others is being cut off by urban encroachment," he declared. "At the same time, the demand for improved quality, performance, and versatility appears to be increasing. Further pressure develops from competition of substitute materials, primarily lightweight aggregates, which are commanding an increasingly prominent place in the market.

"Two approaches to relieving the pressure from this squeeze are indicated. Primarily, the industry must direct attention to making more efficient use of its available materials. Improvements in concrete technology and proper attention to design and construction details can compensate for some characteristics now considered detrimental. Also, the industry can give increased attention to improving the quality of those sands and gravels which, in their unembellished form, are considered unsatisfactory. Clearly, economics will be a highly important factor in applying this latter approach to a material as low in unit cost as sand and gravel.

- "The situation suggests that a multitude of research problems related to this industry are deserving of attention. This paper presents a brief review of the role which research has played, and can be expected to play, in widening the applicability and improving the performance of sand and gravel."

The objective of specifications for sand and gravel, or any other material, is to assure that they will perform satisfactorily the service demanded. There are many uses of sand and gravel, but an overwhelmingly large proportion of the market is for concrete and bituminous mixtures, and it is to these applications that Mr. Bloem devoted most of his paper.

He referred to a paper presented at last year's convention, in which he discussed the significance of tests of concrete aggregates. "The classification of relevant aggregate properties used in that presentation should serve as well to introduce the present problem. It was pointed out that aggregates must be well graded, hard and strong, durable, and reasonably free from deleterious impurities. Size and grading are the properties which lend themselves most readily to control by the producer, although practical limitations exist for each particular deposit. So far as the other characteristics are concerned, practicability and economy fix narrow limits on what can be done. Basic hardness, strength, and durability are inherent in the material as deposited. Deleterious impurities may be amenable to removable or reduction in some cases, depending upon their properties and those of the parent aggregate.

- "An over-all research problem of first importance obviously is to evaluate the effects of the various aggregate properties on their performance. An outgrowth of accumulating this type of information is the development of ways to improve performance."

In conclusion, Mr. Bloem said, "There is never a deficiency of desirable and profitable research in the mineral aggregates field. Improved techniques for getting best performance from sand and gravel are needed. Practical ways of improving the quality of economically available deposits must be assessed. There should be a more realistic and quantitative evaluation of the relationships between performance—strength, durability, volume change, etc., and such characteristics as grading, shape, size, texture, and elastic properties.

- "No single laboratory can hope to provide final answers on these subjects. Nevertheless, the associations can contribute significantly to available knowledge by opening new avenues of investigation and directing attention to broadened applicability with improved service.

★ PUBLIC RELATIONS

As stated by Mr. Davison, who is chairman of the N.S.G.A. committee on public relations, the philosophy of the committee has been to get the individual members of the association to do as much of their own work in this field as possible, and to back that up with aids provided by the national group. The committee also believes that rehabilitation of workings is a critically important part of any public relations effort.

Zoning In pointing out *Some Practical Aspects of Zoning as Related to the Sand and Gravel Producer,* Richard E. Hole, attorney, Greenville, Ohio, noted that zoning is particularly critical in the east and on the West Coast.

Producers in some states have not yet faced the problem, but the steady increase in population will put on the pinch. It is not enough that N.S.G.A. recognize the potential difficulty, Mr. Hole said; the individual operator must dig in and face the problem locally.

- The public must be told of the importance of sand and gravel tonnage to all types of construction. Tougher specifications demand quality materials, and if these are not protected through education of local officials and the public, the construction segment of the economy will suffer—a point which the layman should be made to understand.
- Zoning power should be removed from the local government, Mr. Hole declared, and put in a state body, since state agencies are much more familiar with the over-all picture and the necessity of most effective natural resource development.

Rehabilitation A rehabilitation project known as Lincoln Lakes was described by R. E. Weaver, vice-president of Lincoln Sand and Gravel Co.

The lakes were created as a result of dredging operations following earlier dragline excavation. The spoil piles created by the dragline became banks of the wet pit when dredging was undertaken. Later, overburden was placed in the worked out areas, necessary grading was completed, and the lakes as they exist today were created.

Soon the attractiveness of the section led to requests for lakeside cottage site leases, and the growth of local interest in the property as a recreational area resulted in the incorporation of the Lincoln Lakes Co. To protect development of the property, the latter organization set high standards for housing; and as a consequence, the area now has a number of very attractive year-round dwellings.

Community Relations *The Development of Good Community Relations* was imperative if one of his firm's operations was to survive, reported R. S. Barneyback (vice-president, Henry J. Kaiser Co., Oakland, Calif.).

At the heart of a critical problem faced by the company was a new quarry ordinance proposed by the local government. Adjoining the firm's existing production facilities and its virtually depleted deposit was a tract of new reserves on which an option was held. The area had been zoned for agriculture.

The new ordinance proposed a time limit of one year for operating a given tract, and also detailed the areas from which sand and gravel could be recovered. This ruling originated with a staff of professional planners under a planning commission that had been set up by the county board of supervisors.

Unfortunately, contacts with the planners was singularly unproductive—they could not be made to understand many of the problems of the producers in the area. During the period in which numerous hearings were held, the 25th year of plant operations was also reached, and management set up an anniversary celebration.

It was organized as a Family Day, and all employees and their families took part. As a goodwill gesture, the company also invited the county supervisors, the planning commission and its staff, members of the Chamber of Commerce, and industry colleagues.

Despite the fact that some of the commission staff had formerly refused to look over the property during the hearings, they all attended the party, along with all but one of the commission members, and the full board of supervisors. It was an eye-opening experience for many of these guests who had had little or no comprehension of the complexities of material and processing.

The spirit of understanding generated by this informal gathering and the hospitality had a beneficial effect. Reappraisal of proposed zoning in the light of new familiarity with the problem, led to a new and reasonable quarry ordinance. After finding that the officials reached a new awareness of the firm's objectives, management has since undertaken a general advertising program to also educate the general public.

Arnold I. Sobel, Material Service Division, General Dynamics . . . . a "hard sell" on safety programs is an effective way of cutting down injury suits.

British Program *The Development of Good Community Relations for the Sand and Gravel Industry in Great Britain* is quite comparable to that in the United States, reported Col. H. E. Peirce (chairman, Sand and Gravel Association of Great Britain).

However, in his country, he said, the government set up a commission in 1946 to evaluate the nation's gravel resources. The study was conducted under the direction of several prominent and qualified engineers and geologists.

On the basis of reports prepared by that group during the following eight years, the government became quite conscious of the necessity for protecting this natural resource for commercial development. Regulations are now originated with the National Ministry of Town and Country Planning, and channeled down through county agencies to local officers.

To obtain a permit for operation in any area, the producer must conform to specified performance and rehabilitation standards. He must display good housekeeping, maintain boundary areas in acceptable fashion, and maintain farming in sections of his property that have not been brought into production.

Public Relations programs, however, have not been exploited adequately, Colonel Peirce stated. It is his belief, he added, that such programs should be prepared and propelled at the national level. The basic points to be considered, it was noted, are the size, importance, and contribution of the industry to the national economy. The country can't do without us, he emphasized, and the people should be told the fact.

Sanitary Landfills The use of worked-out pits for sanitary landfills is another way for sand and gravel producers to promote better public relations and at the same time probably benefit financially, according to Donald E. Ball (Northern Virginia Construction Co.). In his paper, *What Sanitary Landfills Mean to Counties and Towns,* he told how his company had a public relations problem because some of its worked-out pits had residential areas growing up around them. In 1954 a superhighway being built in the vicinity needed a disposal area, and this was provided by the company. Later the county needed garbage disposal facilities, and the property is now used for this purpose by this county and others on a fee basis.

The trash is dumped by trucks and is spread by a county-owned tractor and pan. At the end of each day this layer, averaging 12 to 15 in., is covered with a 6-in. layer of soil overburden from an active pit. This procedure eliminates the usual objections of rats, fires, odors, etc. No chemicals are needed. Snow also dumped there, plus with the traffic involved, adequately compacts the fill. A total of 320,000 cu. yd. was dumped in a 10-acre area up to 40 ft. deep. An industrial road and parking area were then built on it, and there has been no real settlement so far.

Mr. Ball urged that any promotion of such a land use be made from a public benefit angle as it is profitable to all concerned. In this instance the county officials are well pleased because the deal solved a disposal problem for them, and conversion of the property to a useful purpose has increased tax receipts.

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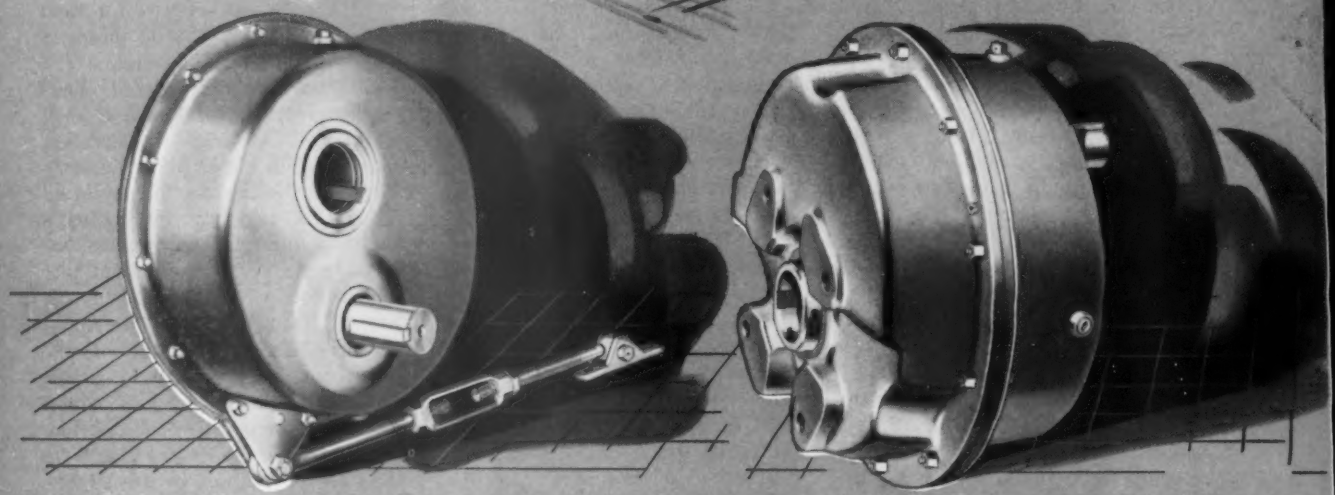

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107J	X	X	X	X	X	X
115J	X	X	X	X	X	X
203J	X	X	X	X	X	X
207J	X	X	X	X	X	X
215J	X	X	X	X	X	X
307J	X	X	X	X	X	X
315J	X	X	X	X	X	X
407J		X	X	X	X	X
415J		X	X	X	X	X
507J		X	X	X	X	X

UNIT SIZE	FLANGE MOUNTED DRIVES					
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	4	9	14	24*		
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115J	X	X	X	X	X	X
203J	X	X	X	X	X	X
207J	X	X	X	X	X	X
215J	X	X	X	X	X	X
307J	X	X	X	X	X	X
315J	X		X	X	X	X
407J			X	X	X	X
415J			X	X	X	X
507J			X	X	X	X

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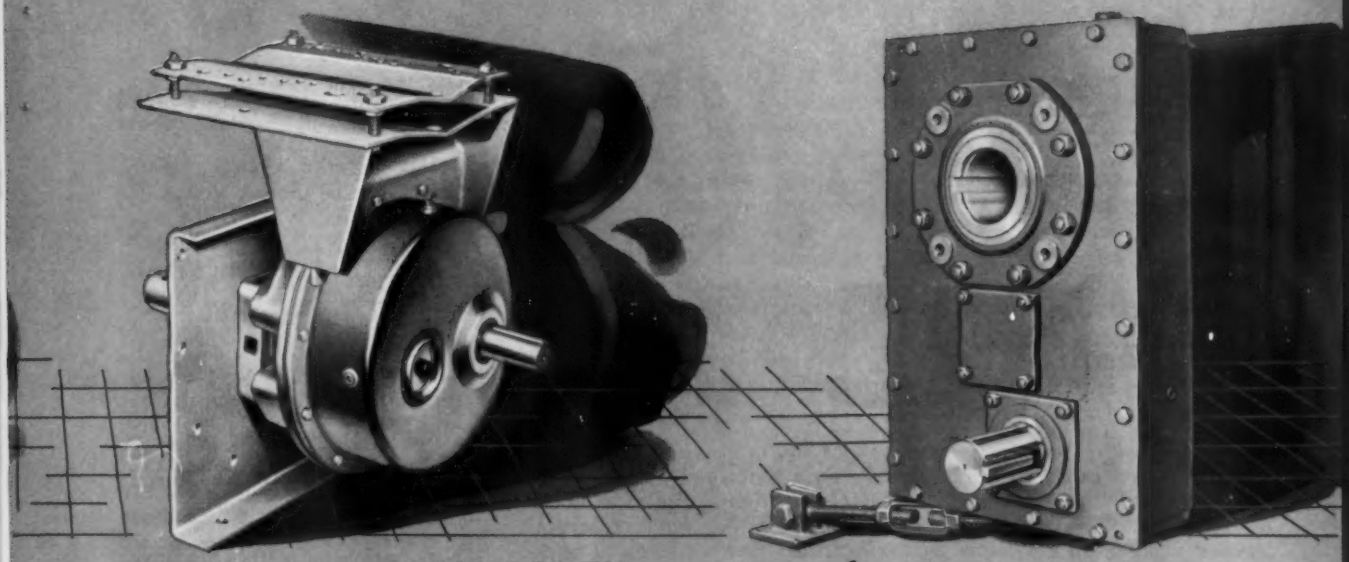

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	4	9	14	24°	
107J	X	X	X	X	X
115J	X	X	X	X	X
203J	X	X	X	X	X
207J	X	X	X	X	X
215J	X	X	X	X	X
307J	X	X	X	X	X
315J	X		X	X	X
407J			X	X	X
415J					
507J					

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Charles Coburn (Waukesha Lime and Stone Company, Waukesha, Wis.) was elected president of the National Crushed Stone Assn. at the recent convention in Miami Beach.

Important program, record attendance at 44th Annual

Industry Report

**For the benefit of our readers, our reporting of this convention has been separated into two parts. On the immediately following pages of Part I are the discussions of association business, and miscellaneous sections of the program. Starting on page 96, Part II carries detailed reports on a number of topics under the headings of operating safety, engineering, etc.*

Part I*

ANOTHER ON THE SPOT REPORT

THE NATIONAL Crushed Stone Association continued to set records with its 44th annual convention, held at The Americana, Bal Harbour, Miami Beach, Fla., January 17 to 21, 1961. The total attendance of 1,076 was the highest ever attained in a non-show year in spite of several handicaps, including bad weather in other areas, which prevented many from attending.

The four-day program was excellent and varied, covering a wide range of subjects. Of interest to all producers were discussions of operating, product, and marketing problems; legal, tax and labor developments; accident prevention, etc. Included were two separate sessions for operating men and equipment manufacturers, one session for salesmen, one for executives, and one for executives and finance officers.

Preceding the general sessions, the boards of directors of N.C.S.A. and of the Manufacturers Division met and elected their respective new officers and executive committee members. These were introduced at the greeting luncheon on opening day, and at the Manufacturers Division luncheon on the second day.

Elections Charles Coburn (Waukesha Lime & Stone Co., Inc., Waukesha, Wis.) is the new president of N.C.S.A., succeeding George D. Lott Jr. (Palmetto Quarries Co., Columbia, S.C.). The new vice-president is Wilson P. Foss (New York Trap Rock Corp., West Nyack, N.Y.). J. Reid Callanan (Callanan Road Improvement Co., South Bethlehem, N.Y.) was re-elected treasurer, and J. R. Boyd (executive director of N.C.S.A.) secretary.

New members of the executive committee are: Arthur Goff (Wallace Stone Co., Bay Port, Mich.); and James H. Grove (M. J. Grove Lime Co., Frederick, Md). Re-elected were D. C. Harper (Southwest Stone Co., Dallas, Tex.); J. L. Holden (Genesee Stone Products Corp., Batavia, N.Y.); M. E. McLean (East St. Louis Stone Co., East St. Louis, Ill.); and W. D. Milne (Kentucky Stone Co., Louisville, Ky.) and Darrell Smith (Joy Mfg. Co.), new chairman of the Manufacturers Division.

New members of the board of directors are: J. F. Coleman Jr. (Bradford Hills Quarry, Inc.); and J. W. Moffat (Inland Lime & Stone Co.). Re-elected honorary members were: W. N. Carter, Joliet, Ill.; H. A. Clark, Chicago, Ill.; S. P. Moore, Cedar Rapids, Iowa; H. E. Rodes, Nashville, Tenn.; O. M. Stull, Buchanan, Va.; and Sterling Tomkins, West Nyack, N.Y.

The new vice-president of N.C.S.A. is Wilson P. Foss III (New York Trap Rock Corp., West Nyack, N.Y.).

N.C.S.A. Convention

Coming Meetings The 1962 annual convention and Manufacturers Exposition of the National Crushed Stone Association will be held at the Conrad Hilton Hotel, Chicago, Ill., during the week of February 11. The 1963 convention will again be held at the Americana Hotel, Bal Harbour, Miami Beach, Fla., the week of January 20 or 27. The 1961 midyear meeting of the N.C.S.A. board of directors will be held July 13 and 14 at The Greenbrier, White Sulphur Springs, W. Va. The Manufacturers Division executive committee will meet on the morning of July 13, and the N.C.S.A. directors will meet in the afternoon.

Manufacturers Division Darrell Smith (Joy Manufacturing Co.) was elected chairman of the Manufacturers Division, succeeding George D. Fraunfelder (Easton Car & Construction Co.). The new vice-chairman is L. A. Rhodes (Stedman Foundry & Machine Co., Inc.). Elected to the executive committee were: Frank E. Briber Jr. (Allis-Chalmers Manufacturing Co.); and J. W. Hardesty (Baldwin-Lima-Hamilton Corp.). W. E. Collins Jr. (Atlas Powder Co.) remains on the committee as a past-president. Messrs. Smith, Fraunfelder, and Rhodes will represent the division on the N.C.S.A. board.

At the directors' meeting of the division on January 16 it was announced that a few members had been lost, but that an equal number of manufacturers had joined, leaving the total at 120. One of the new members is from Australia. During the convention the division held its annual luncheon, at which the new officers and members of the executive committee were introduced.

The new members of the division's board of directors are: J. W. Bloomquist (Euclid Division, General Motors Corp.); H. J. Douglas (Pennsylvania Crusher Division); E. E. Haupt (B. F. Goodrich Industrial Products Co.); C. E. Killebrew (Clark Equipment Co.); and J. Price Taylor (Jeffrey Mfg. Co.).

Executive Director's Report In his annual report J. R. Boyd, executive director of N.C.S.A., highlighted the several important developments of the year

The board of directors of N.C.S.A. met the day before the convention sessions began.

which were of most immediate interest to members. The first of these was the introduction of the so-called Gore amendment, about midyear, which threatened to eliminate virtually the entire percentage depletion deduction for the industry. Prompt steps taken by N.C.-S.A. and others probably minimized the disastrous results which might otherwise have occurred.

With regard to the common situs picketing bill (H.R. 9070) which would amend the present restrictions on utilization of secondary boycott and secondary picketing prohibitions that are now contained in the Landrum-Griffin Act, the association filed a strong objection. This legislation, Mr. Boyd said, did not pass at the last session of Congress but will certainly be introduced with high priority in the new Congress. When this happens, producers should be ready to make their views known to legislators.

● Clarification of the various federal labor standards laws and better information on the circumstances under which each one is applicable is still a vital need, according to Mr. Boyd. The Fair Labor Standards Act, the Davis-Bacon Act, the Walsh-Healey Act, and several others in many instances overlap in such a way that it is almost impossible to apply them consistently. The association's general counsel, the firm of Gall, Lane and Howe, has been authorized to prepare an explanatory and helpful brochure to give producers the best information available. This is a major undertaking involving considerable expense. It will be available to members before the middle of the year.

● The penalties imposed on producers by the present antiquated depreciation policies are apparently to be relieved. Congress is expected to pass remedial legislation soon.

An appreciable increase in participation in both the accident reporting program and the N.C.S.A. safety contest was reported. Participation in these increased 40 percent and 150 percent, respectively, over the preceding year. This Mr. Boyd attributed to the activity of the Accident Prevention Committee, and the elimination of a large part of the paper work previously required. The recent report on accident costs, resulting from 18 months of work on the part of the committee, shows that safety is closely related to profits and should be carefully read. The new "Safety Device" monthly bulletin initiated in August has been well received.

In closing, Mr. Boyd said that in spite of the so-called business recession, membership in the association has remained at 169; its financial condition is excellent, and prospects for 1961 are good.

Federal Labor Standards The labor picture is rather bleak, according to John R. Lane, general counsel for N.C.S.A. President Kennedy is the leading pro-labor spokesman in the government and the setup elsewhere follows a similar pattern. As a result, he feels that we can expect much pro-labor legislation to be introduced and perhaps passed. The only real deterrent, apparently, would be a coalition between members of both parties who think alike on labor and who, as in the past, might modify or even block undesirable legislation. Among items which will be pushed are the following: an increase in the minimum wage; common situs legislation authorizing picketing and boycotting of employers on a project; and extension of the scope of the Davis-Bacon Act.

● In the area of fair labor standards laws there are about 15 different federal statutes which might affect crushed stone producers. These cover a wide range of subjects, from wages to health and safety; and most of them involve record keeping to show compliance, and stiff penalties for violations.

The four major statutes in this group are (1) the Federal Wage-Hour Law of 1939, (2) the Walsh-Healy Public Contracts Act, (3) the Bacon-Davis Act on federal construction, and (4) the 8-hour laws.

Three other statutes of lesser importance also apply in the federal construction field, and riders attached to eight or nine others affect federal or federal-aided construction.

Mr. Lane briefly described the four major statutes and some of the many ways a producer can get into serious trouble if he is unfamiliar with their many and conflicting requirements. These will all be covered in detail in the manual, along with much other valuable information. He also showed a chart (see below) which will help a producer to analyze his business with respect to the jobs he is engaged in and will help him to define his problem area.

With this chart, a producer can find the statutes which are (or may be) applicable to the particular job. The next step is to determine whether a statute applies to the job, and in which category the producer is. All the necessary information for making these determinations will be in the manual.

Tax Problems At a session for executives and finance officers, tax problems of current interest were discussed by J. F. Lane, general counsel for N.C.S.A., and an associate, Carl English, in the firm of Gall, Lane and Howe. From all indications, the future holds uncertainty on tax legislation. The new administration is not yet committed on details, and the new Congress is an unknown factor. President Kennedy has announced that he expects to close "tax loopholes," and these probably include percentage depletion, and abuses in business expense deductions. Other tax reforms planned may include an over-all revision of revenue laws. He is said to favor liberalization of regulations on de-

	Interstate Work	Federal Supply	Federal Construction	Highways—Federal-interstate	Federal-Aid Construction
FLSA	X	X	X	X	X
Walsh-Healey[1]		X[1]			
Bacon-Davis			X	X	
8-Hour		X	X		

[1]Affects only contracts of $10,000 or more.

preciation; and something helpful to industry may develop.

● Bad news on percentage depletion was the recently issued I.R.S. revenue ruling holding that the Supreme Court's Cannelton decision sets the cut-off point at the primary crusher. This is based on the belief that primary crusher product can be considered a finished product. Any producer who feels that he should get a more liberal ruling can take it to court but he should be prepared for lengthy and costly litigation.

This new ruling, Mr. Lane stated, is Revenue Ruling 61-17, technical release 289, dated January 16, 1961. It "rescinds" the only previous one on cut-off which recognized secondary crushing. It appears that it will apply to all past years still open, but there is uncertainty about 1961 and later. Mr. Lane thinks this may be effectively challenged, and the pending Centroplis Crusher Company case may give an indication of policy.

● Much progress has been made in the last two years toward obtaining a more liberal depreciation policy, and the association has worked actively on this through its depreciation committee and counsel. Producers are urged not to be misled by time element depreciation, and the association will support any depreciation regulations which will allow for inflation.

With respect to business entertainment expense deductions, Mr. Lane said that observing the regulations may help prevent further pressure. Employees should render proper accounting to their employers in order to keep both out of trouble. Closely-held corporations, the worst offenders, will get special attention from examining agents.

The Manufacturers Division elected these new officers (seated l. to r.): George D. Fraunfelder (Easton Car & Construction Co.), retiring chairman; Darrell Smith (Joy Manufacturing Co.), chairman; L. A. Rhodes (Stedman Foundry & Machine Co., Inc.), vice-chairman. Standing: J. R. Boyd (N.C.S.A. executive director), secretary; W. E. Collins Jr. (Atlas Powder Co.), executive committeeman; Frank E. Briber Jr. (Allis-Chalmers Mfg. Co.), executive committeeman; Charles Coburn (Waukesha Lime & Stone Co.), president, representing N.C.S.A.; J. W. Hardesty (Baldwin-Lima-Hamilton Corp.), executive committeeman.

Sales Session C. A. Munz, vice-president, Eastern Rock Products, Utica, N. Y., moderated a symposium on the salesman's role in the industry. Various phases of this important subject were discussed in several papers.

T. C. McPoyle (D. M. Stoltzfus & Son, Inc.) spoke on the necessity of keeping the product before the public at all times. He defined the ideal salesman as one who is dedicated, who can create demand, conciliate the customer, and generate markets by his "spade work" in new fields. These include highways, railroads, sewage filtration, agricultural purposes, and sand-blasting. Others include uses for finely pulverized material, heavy-duty floors, granules, poultry grits, high-temperatures uses, terrazzo, etc., all of which will afford higher returns than the conventional uses.

Edmund Clark (Munnsville Limestone Corp.) covered the subject of ways to build up better public relations, emphasizing that small market areas are important, and citing cases in which 1,466 limestone quarries purchased equipment worth more than $39 million in 1960. He feels that community relations could be bettered if salesmen pictured to objecting neighbors the role that Nature has played in creating its eons-old deposits.

How a salesman can co-ordinate sales and deliveries was explained by T. M. Kilgore(Florida Crushed Stone Company), who believes that a salesman should sell only the products which can be produced by a plant. In this co-ordination the salesman should take into account the most effective routings and types of delivery equipment. He should always keep a close schedule of shipments to avoid misunderstandings with customers and to effect the best service that is possible.

Collection of delinquent accounts and the help a salesman can afford the company's credit manager were topics discussed in a paper by Reve Eckman (National Lime and Stone Company). He declared that positive policies must be established as to credit ratings on all customers and other potential buyers prior to any sales, to avoid later trouble. He feels that the salesman should help gather any available credit data, including financial statements, banking connections, lien rights, guarantee of payment, marginal accounts, past records, etc., and work with the credit manager to make every sale produce a profit.

V. G. Aubry Jr. (Houdaille Industries, Inc.) pointed out how salesmens' reports can provide management with essential data. Claiming that the day of "loose selling" is a relic of past inefficiency, he described the various forms which his company now uses to make effective use of sales information. Some

(*Concluded on page* 108)

44th Annual N.C.S.A. Convention CONTINUED

Part II *

**On the following pages our readers will find details on all topics discussed during the convention in the fields of engineering, operating, safety, etc. These topics run the gamut from blasting to research, and are grouped under appropriate main headings. We hope this arrangement will accomplish our goal of getting the reader quickly to the particular subjects in which he is primarily interested.*

Engineering, Operating

Engineering Director's Report The last year has been a highly satisfactory one from the standpoint of engineering work done, according to Joseph E. Gray, engineering director, as the department has been well staffed and well equipped to conduct research investigations and to give the necessary technical study to members' problems.

● Dense graded aggregate base course construction offers a large and expanding market for crushed stone, and every effort must be made to assure that it will perform with complete satisfaction as far as materials are concerned. Failures, Mr. Gray said, can be caused by inadequate design, poor methods of construction, or use of improper materials. In order to assure the best performance for crushed stone, research was directed toward answering these questions: What is the maximum size of aggregate? What is the effect of the plasticity index? What is the effect of minus 200-mesh material?

The results obtained were summarized as follows:

"1. The strength (load-carrying capacity) and rigidity increased as the maximum size of aggregate increased. The practical application of these indications would be that base courses should be built with the maximum size of aggregate that can be handled and placed without segregation.

"2. Base course materials with non-plastic fines possessed higher strength and were more rigid than material with plastic fines, especially if the plasticity index was 5 or more. It is indicated that the lower the plasticity, the better the performance of the base material under conditions of high moisture.

"3. With a uniformly graded material, the highest strength was obtained with about 8 percent passing No. 200 sieve, which tends to confirm the present practice of several highway departments of requiring 5 to 12 percent to pass the No. 200 sieve.

"Through these researches data have been obtained which should be helpful in developing the best performance from crushed stone when used in dense graded aggregate base course construction."

The numerous individual problems of members who have been helped fall into a pattern of two basic and important problems, according to Mr. Gray. They are: (1) a trend toward raising the quality of aggregates required for pavement surfacing and structures and (2) a trend toward greater restriction with respect to tolerances.

● When producers have had stone from their quarries rejected on a quality basis, it usually develops that, while the deposit is predominantly top-quality material, there are some ledges of questionable or unsatisfactory quality. In the normal working of the quarry a concentration of this poor-quality stone has caused the trouble. These ledges were located and eliminated from the normal production, with excellent results in most instances. In some cases this has meant a more costly operation, as selective quarrying is necessary.

● The trend toward specific limitations in quality requirements has created problems for some producers, but others favor such limitations. These requirements include soundness tests, gradation, shape of particle, alkali reactivity, soft pieces, etc. Failure of an aggregate to meet specifications for any of these disqualifies it for highway use.

Operating Session Informal concurrent group discussions on operating problems, so popular in the past, were repeated this year.

The ten subjects included the following: accident prevention, blasting vibration studies, drilling, dust control, lubrication, maintenance and repair of fixed equipment, maintenance and repair of portable equipment, repair and replacement of parts, disposal of water and waste solids, and rubber-tired equipment in quarry operations.

While interest was divided between all the sessions, it appeared that the subject of drilling was of greatest importance to most producers. Here, Dr. B. J. Kochanowsky, (Pennsylvania State University) offered pertinent advice on problems which producers put to him regarding inclined drilling, means of obtaining better fragmentation, relative costs of small- or large-diameter holes, rate of drilling, periods for regrinding bits, rates of penetration with 6½- and 4¾-in. bits, cost per cu. yd. of output with holes of different diameters, types of air receivers, etc.

Another subject which evoked special interest was the discussion on disposal of water and waste solids. Many suggestions were offered to show how these waste materials have been turned into profitable items in new markets. The construction of settling basins, dikes built of tailings, etc., to create water storage were discussed in detail by many producers from all parts of the country.

The discussion on lubrication, moderated by W. H. Ruby (Acme Limestone Company) called forth many pertinent ideas from producers entering into a discussion on savings accruing from efficient use of equipment lubricants.

J. A. Carnathan (Vulcan Materials Company), led the discussion in the session devoted to policies and procedures for maintenance and repair of fixed equipment.

Two of the ten informal concurrent group discussions on operating problems which were a feature of the convention. Above: Discussions on drilling were led by Dr. B. J. Kochanowsky (Pennsylvania State University) and W. J. Parton (General Crushed Stone Co.). Below: J. A. Carnathan (Vulcan Materials Co.) led the discussions on policies and procedures for maintenance and repair of fixed equipment.

Dust Control Dusty quarry roads are just as big a problem as dusty plants, according to Montagu Hankin Jr. (Houdaille Construction Materials, Inc.). At his company it was found that unpaved quarry, haulage, and storage roads can be effectively treated with calcium chloride or several types of oil. Calcium chloride is applied at a cost of about 13 cents per sq. yd., and this is done twice a year. He warned that rain soon after application could be harmful. At one plant No. 4 fuel oil is applied every two weeks and at another every eight weeks. A disadvantage of using oil is that it creates a problem in repairing, grading, etc., and a mechanical sweeper must be used at intervals.

● Plant dust, Mr. Hankin stated, can create problems with employees, neighbors, and product specifications; and the steps taken to suppress it must be guided by the relative importance of these factors at each plant. The proximity of neighbors, and silica present in the dust are added factors; and the float dust particle size varies for different rocks and plants.

The neighbor problem is the most serious. In New Jersey and certain other states neighbors can zone you out of business. Houdaille management has tried wetting agents, with limited success. The cold climate and intermittent use created problems. They cannot be used in wet weather; they require clean water and must be shut off when there is no material on the belt; and if the stone is wet too much, it will clog the screens. As a result, this method is used only on coarse rock.

● In the use of dust collectors, many factors must be taken into consideration, including degree of dust concentration, particle size of the dust to be collected, temperature and relative humidity, characteristics of the material collected, and the desired method of disposal. The electrical precipitator, said Mr. Hankin, is very efficient, but too expensive for most plants. The cloth collector is efficient and less expensive. Factors involved in its use include size, cost, heat, humidity, changes in air flow, shaking intervals, etc. The dry material collected can be sold but is dusty in storage or disposal. In his experience best results have been used with an air flow of 2.25 c.f.m. per sq. ft. of cloth surface.

Mr. Hankin also uses wet collectors where there is ample water, no corrosion, and no need to market the dust. The static or spray tube type is being used successfully, as are also the vertical tower type and the wet centrifugal type.

In describing his own experiences with a spray tower collector in an asphalt plant, he advised ample water and pressure, the use of neoprene paint to prevent corrosion, ample cyclone capacity ahead of the tower, and the use of brass rings or nozzles. In dry cyclones, abrasion is a problem and overlapping pie-shaped liners are used. In cloth bag collectors, baffles are used to prevent eddy currents which might rip the bags. The collectors are mounted high for better disposal of dust, and automatic shaking is used for efficiency. An Airslide and dust-tight elevator feed the dust to a bin, from which special bulk-type trucks are loaded.

Inclined Drilling Inclined drilling was one of the most popular subjects at this meeting. A detailed paper on this promising

method was presented, and the subject also drew a large audience at the round-table session. The paper was presented by Dr. B. J. Kochanowsky of Pennsylvania State University, who has been actively promoting the use of this method in this country for several years. He has discussed it before other bodies and has also authored several published articles. This interesting and important subject will be covered only briefly here as the next issue of PIT AND QUARRY will contain in full the detailed and well illustrated presentation this subject deserves.

● For those not familiar with inclined drilling, it has been determined that in vertical holes about 50 percent of the explosive energy is lost, and there may also be a toe problem. In holes inclined 22½ degrees from the vertical only 28 percent is lost, and in 45-degree holes none is lost. There is also no toe problem. Actually, ratios of up to 15 tons per pound of explosive have been obtained. There is also less ground vibration, and drilling equipment is safer because it is farther back from the edge of the bench. Several crushed stone producers are now trying out this method, widely used in Europe.

Maintenance and Repair

A panel of three top operating men in the industry presented papers on the problems involved in the maintenance and repair of equipment used in quarries and plants. Three aspects of this problem—lubrication, portable equipment, and fixed equipment—were discussed in turn, and a discussion period followed for the operating men and equipment manufacturers present. W. H. Ruby (Acme Limestone Co.) presided over this session.

Lubrication In developing an adequate lubrication program at his operation, said Mr. Ruby, he has found it necessary to (1) place responsibility for lubrication, (2) set scheduled lubrication periods, and (3) keep accurate lubrication records. In any size of operation, he said, one person must be made responsible for all equipment. This man must be familiar with the equipment, but the actual lubrication should be done by the man who operates each unit.

In order to do the job properly at Acme, lubrication diagrams and charts were obtained from the equipment and lubricant manufacturers, and great care was taken to select the proper lubricants. (The field engineers of oil companies will make surveys annually to ensure this.)

Lubricating is done either before work begins in the morning or at noon for all equipment except trucks, which are lubricated by a mechanic who comes one-half hour early. The fixed equipment is lubricated by one mill oiler. A card is kept on every item.

Portable Equipment The maintenance and repair of portable equipment such as shovels, loaders, trucks, drills, etc., was discussed by C. F. Stetser, New York Trap Rock Corporation, who is superintendent of the mechanical and electrical department started 2½ years ago in his organization. This department is responsible for the selection, maintenance, and repair of equipment. During the winter the operating crew overhauls and checks equipment and does the necessary work under the supervision of mechanics. A Sperry Electroscope is used in this work. Regular scheduled inspections of equipment are made; and each item is rated, so that it can be watched and repaired before it breaks down.

In this program spare dippers and handles are on hand to be rotated when repairs are necessary. Dipper teeth and parts are rebuilt, and a watch is always kept for better methods. Oil, filters, etc., are changed on schedule. Records are kept on tires for rotation, recapping, etc. It has been found best to have a local dealer make regular tire inspections and give him the new tire and recapping business. Front-end loaders are relatively new. Because they are a high maintenance item, Mr. Stetser pointed out, an accelerated turn-in may be advisable.

The results achieved by this program have been: reduction of lost-time breakdowns, extension of economic life of wearing parts, improvement of over-all performance of machinery, and increased ability to evaluate replacements.

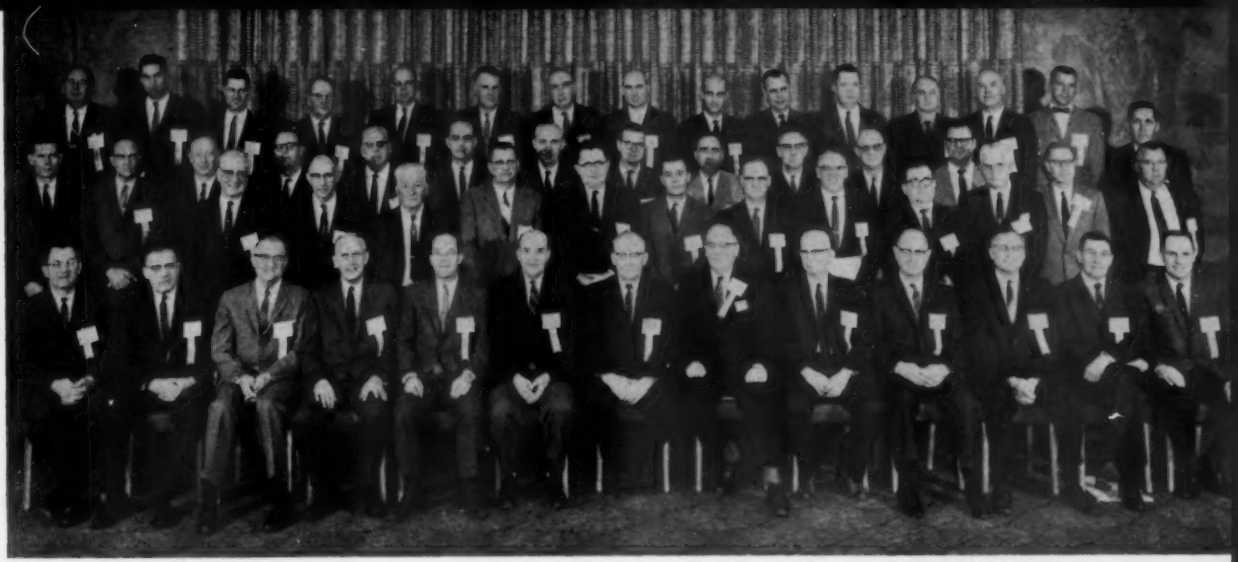
Fixed Equipment The maintenance and repair of fixed equipment such as crushers, screens, conveyors, etc., was discussed by J. A. Carnathan, Birmingham Division, Vulcan Materials Co., who is vice-president-operations. In 1952 the maintenance department was reorganized and a program of preventive maintenance and inspection was started. Every item is numbered, catalogued, and listed; and everything that happens to it is recorded. An inspection form is made out every month, work order cards are okayed by the superintendent or his assistant, and all costs are kept. Foremen must give a reason for all delays, and a weekly report is made by the operating department. There is a weekly operating meeting aimed at reducing costs and increasing efficiency; and one session every month is devoted to maintenance.

Conveyors were first under scrutiny, and an early step was standardization as far as possible. Electric vulcanizing, adopted for splicing, is now also used to recover belts. Deeper troughing idlers were installed, and in three years they have reduced conveyor costs by 35 percent. Belts formerly scrapped are now salvaged and retreaded at a cost of only 38 percent of the cost of new ones. The machine used will cover 6 ft. of 60-in. belt at one time. (Portable machines are used at the plants.) This work is done only if not more than one ply of fabric is damaged. In working on crushers, a machine was developed which revolves liners while they are being rebuilt.

Research

Blast Vibrations A report on *Recent Developments in Bureau of Mines Investigation of Vibrations from Quarry Blasting* was given by Dr. Leonard Obert, chief, Applied Physics Laboratory, U. S. Bureau of Mines. At the Chicago convention a year ago he had described a 5-year program just started which would provide up-to-date information on the seismic effects of blasting and the much-needed revision of the Bureau's Bulletin 442 on this subject, which was published in 1942. This work will

(*Concluded on* 108)



N.L.I. directors present in this picture are (seated, left to right): Eugene Meckley, Pa.; George Karch, Ohio; Paul Frank, Ind.; Arthur R. Alvis, Mo., chairman; Robert M. Koch, Washington, D.C., president; William J. Clark, N.Y., first vice-chairman-elect; L. R. Falk, Iowa, chairman-elect; Roger E. Meshberger, Ind., second vice-chairman-elect; J. B. Mount, Tenn., past-president and secretary-treasurer; Joseph J. Griesemer, Mo., past-president; Paul W. Seitz, Ind., past-president; Roy E. Mayes, Mo.; R. W. Cullor, Kans., regional vice-president.

Second row: T. K. Jones, Tenn.; Norman H. Muck, Ill.; W. L. Bryan, Minn., past-chairman; Herbert C. Gray, Okla.; past-president; Thomas E. Lalley, Pa., past-president; Cecil R. Pottorf, Ill.; George S. Harvey, N.H., representing the Manufacturers' Division; Nicholas Pallotta, N.Y.; Leonard S. Fry, Pa., past-president; Martin Valstad, Ill.; W. C. Faylor, Pa.; Holman G. O'Connor, N.Y., regional vice-president-elect; John M. Deely Jr., Mass.; Powell G. Potts, Ky.; Roy C. Chapin Jr., Pa.; J. A. Gallagher, Pa.; George A. Ziegler, Md.; Einar Nielson, Minn.; H. C. Wolfe, Ohio, regional vice-president-elect; R. O. Bemis, Ohio; E. L. Aussieker, Mo.; R. W. Meyer, Mo.; Charles Rich, Vt.; R. S. Water, Ala.

Third row: John R. Rice, Va.; T. B. Stafford, Vt., regional vice-president; Floyd H. Millen, Iowa; D. W. McLellan, Ky.; N. R. Ackland, Ill.; C. E. Conklin, R.I.; C. W. Meyer, Pa., chairman, Manufacturers' Division; Kent Angerer, Iowa; Ray Cook Jr., Iowa; Victor A. Kraemer, Wis.; Arnold W. Mulzer, Ind., regional vice-president; A. F. Dunkin, Ind.; R. D. Lawlor, Tenn.; George E. Nettels Jr., Kansas.; P. K. Alvord, Mo., representing the Manufacturers' Division.

16th N.L.I. Convention Reflects Impressive Growth

Stature gained in agricultural work is paralleled in highway field

By BUREN C. HEROD

WITH the impetus of a convention program that was widely regarded by those in attendance as the most outstanding thus far in the group's history, the recent annual meeting of the National Limestone Institute set a number of records for the association's sessions. First was the largest registration of members and guests; second, the most members from the largest number of states attending a given meeting; third, the largest number of nonmember producers in attendance; and fourth, a new high in manufacturer and supplier representatives attending.

Held at the Statler Hilton, Washington, D. C., January 16-19, this convention was the 16th annual meeting of the association, which was formerly known as the National Agricultural Limestone Institute. Subsequent growth of membership interested in both agstone and other limestone markets led to the formation of the National Crushed Limestone Institute, with an Agricultural Limestone Division and a Crushed Limestone Division. The two groups later joined under the present corporate organization, and the recent convention was therefore the second for N.L.I. in its present entity.

The growth of the group has been paralleled by increasing complexities in the markets its members serve, and its vigorous approach to solution of its problems is reflected in the convention program, which presented a large number of outstanding speakers representing pro-

N.L.I. officers (left to right): William J. Clark (Munnsville Limestone Corp., Munnsville, N.Y., first vice-chairman-elect; Robert M. Koch, president; Arthur R. Alvis (Alvis Limestone & Concrete Products, Butler, Mo.), 1960 N.L.I. chairman; L. R. Falk (L. R. Falk Construction Co., St. Ansgar, Iowa), 1961 chairman-elect; and J. B. Mount (Maymead Lime Company, Shouns, Tenn.), secretary-treasurer.

gressive industry members and recognized authorities in the agricultural and highway construction fields.

Emphasis on agstone promotion and use, conservation programs, the status of the highway program, other limestone markets, and the general state of agriculture were balanced by informal group discussions of individual producer problems in virtually every operating phase.

The close and continuing relationship of this association's producer members to our agricultural economy is of many years standing, and concern for improvement and rehabilitation of the nation's soils has been paramount in the group's annual meeting programs. With the growth in membership of limestone producers who are also extensively concerned with road construction materials, the expansion of the nation's highway system has become a comparably significant area of association activity.

N.L.I.'s policies with respect to national conservation programs and objectives are well known throughout the country. Although in comparison to those efforts its formal relationships to the road program is rather new, the group has made its support clear to federal, state, and other agencies involved, and has already gained considerable stature from its concentrated efforts to aid in the solution of many problems in the program. The latter include such well-cited factors as material specifications and financing.

1961 N.L.I. Officers Heading the association for the coming year is L. R. Falk (L. R. Falk Construction Co., St. Angsar, Iowa), the new chairman. William J. Clark (Munnsville Limestone Corp., Munnsville, N. Y.) moved up to first vice-chairman, and also heads the C.L.D.; he was succeeded as second vice-chairman by R. E. Meshberger (Meshberger Stone Co., Inc., Columbus, Ind.), who now heads A.L.D.

A vacancy on the executive committee was filled by the election of M. R. Ackland (Stoneridge Limestone Co., Rochelle, Ill.). The following regional vice-presidents were elected to fill vacancies: Fred K. Betts III (The Betts Quarry, Harrisonburg, Va.), A.L.D., Region I; Holman O'Connor (Frontier Stone Products, Inc., Lockport, N. Y.), and H. C. Wolfe (Wyandot Dolomite, Inc., Carey, Ohio), C.L.D. Region I and Region II, respectively.

Newly elected C.L.D. directors are Stanley Buye (Arthur Overgaard Co., Elroy, Wis.), Nicholas Pallette (Pallette Stone Corp, Saratoga Springs, N. Y.), and H. R. Schneider (Servtex Materials Co., New Braunfels, Tex.). New A.L.D. directors are J. W. Brastrup (Multi-Mineral Products Corp., Billings, Mont.), T. C. Callison (Campbell Limestone Co., Blacksburg, S. C.), W. M. Hemphill (Hemphill Bros., Inc., Seattle, Wash.), and R. A. Raese (Greer Limestone Co., Greer, W. Va.).

J. B. Mount (Maymead Lime Company, Shouns, Tenn.) is in the second year of a three-year term as secretary-treasurer. Robert M. Koch and Samuel Omasta were re-elected president and vice-president, respectively.

Manufacturers' Division The new chairman of the growing Manufacturers' Division is Wayne W. King (W. S. Tyler Co.). J. A. Groden (International Paper Co.) was elected first vice-chairman and Gale E. Allen (Highway Equipment Co.) was named vice-chairman.

In addition to Mr. King and Mr. Groden, the Manufacturers' Division is represented on the N.L.I. board of directors by C. W. Mayer (Bradley Pulverizer Co.), immediate past-chairman of the division, and P. K. Alvord (E. I. duPont de Nemours & Co.), another past-chairman.

President's Report The review of association objectives and activity by its top staff man, Robert M. Koch, pinpointed the ever increasing contacts on Capitol Hill in which the importance of agricultural limestone has been stressed. The need continues to hold a commanding lead over application, but the effort expended on presenting the true picture to congressmen has at least kept ACP from dropping to ineffective levels.

Contacts with county agents and committeemen (over 12,000 in all) represent another major approach toward the goal of returning soils to proper fertility.

In the highway construction field, the association has maintained close co-operation with the Bureau of Public Roads—and reportedly is the only national group that is strongly pressing for amplification of the ABC phase of the national highway program.

The association has expanded its services to members in keeping with the gain in membership, and now offers an extensive insurance coverage program in addition to engineering aid. The latter activity is also to be enlarged with increasing participation in technical society committees.

AGSTONE

Promotion One of the most stimulating analyses of agstone promotion and applications ever presented at these meetings

was given by James H. Eakin, extension agronomist, Pennsylvania State University. Pursuing the theme of *Selling Agricultural Limestone on its Merits,* Mr. Eakin pointedly indicated that this is exactly what has not been done by the industry.

● There has not been enough concentration on the lime factor in the lime-fertilizer combination, he emphasized. Lime should be sold on the basis of what lime alone will do for the soil. It has been proven not only that fertilizer is most effective in the presence of adequate lime, but that plantings thrived more in tests where only lime was applied than in those were only fertilizers were used.

● A simple story is the most effective one in selling the farmer, Mr. Eakin said. Forget about ions and base exchanges; emphasize the basic facts that enough lime must be used to get a "bottom-to-top" treatment, not just a film that "short changes the soil;" and that time and mixing factors are critical, *i.e.,* the lime must be put on at the right time and followed by *thorough* mixing to depth.

Some startling proofs of liming results were presented in a series of slides illustrating planting tests. These showed plantings in untreated soils, in soils treated only with fertilizer, in others combining both lime and fertilizer, in more with lime alone for treatment, and in test pots, where lime zones were created at different levels. The latter in particular drove home the effect of acid soils on root systems. The slides gave a striking comparison of root systems in the treated and non-treated zones.

Another impressive graphic presentation was based on a chart showing the comparison between test plantings in soils of pH 7.0 and pH 5.0 fertilized (limed) according to soil test. The following charted results show striking differences—a sure way of stimulating the farmers' interest, Mr. Eakin pointed out.

	Yield/Acre pH 7.0	Yield/Acre pH 5.0
Alfalfa	8,000 lb.	None
Red clover	6,000 lb.	1,200 lb.
Timothy	6,000 lb.	2,400 lb.
Corn	100 bu.	67 bu.
Wheat	40 bu.	30 bu.
Oats	60 bu.	54 bu.
Barley	60 bu.	14 bu.

Chairman A. R. Alvis, left, presenting N.L.I. Distinguished Service Awards for contributions to agriculture and the highway field. Bertram D. Tallamy, center, Federal Highway Administrator for the Eisenhower Administration received the award for work in the highway field; and George H. Enfield, right, extension agronomist, U.S. Department of Agriculture, received the award for work in agriculture.

Sales Symposium In keynoting the symposium on how to expand agstone sales, Fred Y. Montsdeoca (Dolomite Products, Inc., Ocala, Fla.,) commented that producers themselves should develop even more knowledge of the technical aspects of their product as a basic step toward the most effective education of the consumer. Subsequent discussion related to the promotion efforts and experience of individual producers. Representatives participating in the program included Leo Davis (Davon Inc., Columbus, O.), John M. Deely Jr. (Lee Lime Corp., Lee Mass.), Robert N. Stewart (Meshberger Stone Co., Inc., Columbus, Ind.), and George A. Ziegler (M. J. Grove Co. Division of The Flintkote Co., Lime Kiln, Md.).

Mr. Davis described a booklet, prepared and distributed by his company, that was designed to familiarize the customer with many details of agstone application. Among the subjects covered in the booklet, which was developed with the aid of several agronomy groups, are the following: the need and value of liming, soil sampling procedures, methods and schedules for application, and primary factors in the nutrition of plants and animals completely dependent upon proper liming.

In addition to that primarily educational material, the Davon company also utilizes some of the more common promotional media, including newspaper advertising, pencils, slide rules for rapid determination of agstone requirements for various desired pH levels, etc. Aside from these aids, the firm relies to a great extent upon its trucker-dealers as effective salesmen to provide direct contact with the farmers, and it concentrates on maintaining a top working relationship with them.

● "Is it sound for producers to promote agstone use?" This pointed query for a promotion session was raised by Mr. Deely, who backed it up with interesting figures from his company's experience. With 1952-1954 as a base period, it was found that the firm had enjoyed a 61 percent increase in agstone sales volume by 1960—accompanied by a 42 percent drop in profit margin.

● Why did this situation develop? Mr. Deely's conviction is that the industry has for too long used the negative approach—pointing out the cheapness of the material, instead of focusing attention on its quality.

Ample justification for the latter statement is found in the fact that all the ideal factors are available for agstone marketing: the need has been widely publicized, there is ready technical support from the agronomy field, and the benefits of agstone uses are time-tested.

Promotion of a material with such a potential is therefore obviously sound, it was pointed out. To match the effort with the material, Mr. Deely suggested several effective steps. First, he emphasized, agstone salesmen should sell the product alone; and since it has been found that direct calls on the farmer produce the best sales results, this type of contact should be No. 1 in the sales program.

Considerable groundwork for sales calls can be laid by prior mailings to farmers from listings available at county offices. Interest in advertis-

ing literature can be stimulated by varying the approach between a technical emphasis and lighter (even amusing) treatment. Close liaison with fertilizer groups will also aid in expanding agstone sales volume.

At the core of all the above procedures, Mr. Deely stated, is the fact that producers must turn to the policy of selling on the basis of quality—not price.

● Personal contact with the farmers was also cited by Mr. Stewart as the most important of three primary factors in his firm's promotion program. The others are advertising and direct mailings.

Both of the latter should be timely from the standpoint of appropriate agstone application periods. In combination, they are most effective at times in encouraging the farmer to take advantage of ACP participation.

Co-operation with county agents in educational programs, and participation in county fairs have been rewarding efforts. They have provided the opportunity to meet and talk with a far greater number of farmers under mutually favorable conditions. Significantly, the decrease in farm income was indicated by Mr. Stewart to be a primary problem for expansion of agstone usage.

● Pulling no punches, Mr. Ziegler indicated that a good number of producers apparently give only lip service to a professed concern with agstone promotion. Backing up that jab with facts and figures, he pointed out that the present membership of 458 (A.L.D.) is the largest in history—but that only about one-third of that number availed themselves last year of the extensive promotional material provided by their association. The producers' professed interest in promotion does not reconcile with performance.

In addition to suggesting that the membership could well use what is available before wailing about promotion effectiveness, Mr. Ziegler indicated other directions of constructive effort. Research has already emphatically proven the benefits of liming, and it is only logical that subsidizing even more extensive studies would have long-range benefits to promotion.

● Simple dollar arithmetic has been largely overlooked—basic computations that readily prove agstone returns more per dollar of investment than any other expenditure in agriculture. Strongly agreeing with prior speakers, Mr. Ziegler noted the stimulating effect that direct contact with the farmer has on sales.

Farmer's Dilemma According to Congressman Thomas G. Abernethy (D., Miss.), the nation is at its most prosperous level in its history, but one segment—the 20 million farmers—have not shared equitably in the prosperity.

● Farmers have been humiliated by all media of communication, they have been pulled one way and then another, have been damned from many sides—but they have still done the best and most efficient work in the American economy.

The high standard of living in this country is due to the efficiency of the farmer, the congressman stated. In the United States one out of every 25 men feed the population. In Russia one out of three are farmers. Despite that fact, the farmer has been told to ask for less at the same time that minimum wages have gone up, and the cost of supplies has risen steadily. One of the greatest obstacles to the solution of the farmer's problem, Mr. Abernethy said, is the partisan political atmosphere of the last several years.

There is a job to be done, he emphasized, and a part of this involves restoring bipartisanship to committees on Capitol Hill. Further, the full story must be told to all people, by the businessmen, for the benefit of the farmer. The cloud of general misconception must be cleared away.

Industry's former concern for the farmer must be restored. He buys and uses more material than any other segment of the economy, while conversely, only 25 cents of each dollar spent in this country goes for food.

HIGHWAYS

Promising Aggregate Markets William E. Dickinson, president, Calcium Chloride Institute, noted that two areas where C.C.I. and the N.L.I., have much in common represent *New Opportunities for Limestone Producers*. These areas of common interest involve dense graded aggregates, and maintenance of unpaved roads.

Congressman Thomas Abernethy (La.) . . . The high standard of living in this country is due to the efficiency of the farmer.

The trend in recent years away from the waterbound macadam type of base construction is based upon the proven performance and advantages of dense graded material in base construction for high type pavements, shoulder stabilization, unpaved road surfacing, airport construction, parking lots, driveways, etc.

Small-sized aggregate (1½-in. down to 200-mesh) is used most advantageously in such work, and it delivers maximum benefits with proper compaction. Moisture control is the key to the latter.

● This is where calcium chloride enters the picture, Mr. Dickinson stated. Because it retards the evaporation rate of water, the amount of water needed during compaction is reduced, and a uniform density is achieved. Calcium chloride moisture films around fine particles are thinner and stronger than plain water, and this, plus optimum moisture during compaction, means higher density.

From many standpoints—design, construction, testing, maintenance, public relations — the combination of dense graded aggregates and calcium chloride present distinct advantages. These include the density factors noted above, reduction of segregation and retention of fines, reduced maintenance and inspection of bases, and improved public relations through dust control during construction.

Contracting with local, township,

B. D. Tallamy, retiring Federal Highway Administrator . . . Safeguards against irregularities in the highway program have been effective.

Congressman Gordon Scherer (Ohio) . . . We are engaged in the greatest public works program in the history of the world.

Congressman A. S. Herlong (Fla.) . . . We can no longer afford capital-destroying tax rates.

county, or state governments for maintenance of unpaved roads appeared to Mr. Dickinson to be a promising field for agstone producers who have lime-spreading equipbusiness the same equipment could ment.

A contributing factor to the potential for this market is the fact that producers can handle such material in bulk, which would represent a more favorable cost to the smaller government bodies.

Planners' Objectives General L. W. Prentiss, executive vice-president of the American Road Builders Association and one of the most prominent and well-informed advocates of an expanded highway program, pointed out that a new administration in Washington indicates probable changes in the highway program. They may be large or small, he said; but at the very least, present policies will be closely scrutinized.

There are many points of view among members of A.R.B.A. which Gen. Prentiss represents, and as matter of course, the group's policy must cover diverse interests.

● On a fundamental premise, however, the group stands as one—the importance of a "carefully conceived, financially sound, long-range, balanced Federal-Aid Highway Program." This is essential to the nation's future economic development, national defense, and safety.

With respect to the first factor in this policy statement, there is widespread criticism that the present highway program was not carefully conceived. This is clearly rebutted by the fact that proposals for such a program can be traced back to 1938. Although the program as it stands is not perfect, it is still the culmination of 18 years of groundwork preceding congressional action —hardly hastily conceived.

● Without sound financing, the program cannot survive, General Prentiss emphasized. In 1956 Congress declared its intent that the Federal-Aid program be completed at the earliest practicable date. The Trust Fund established has not been adequate to keep up with the vagaries of apportionments to states, to contracts, etc. Increased revenue into the fund is then obviously mandatory.

● How much additional revenue is needed? About $1 billion per year more until 1972. How can it be raised? One suggestion receiving wide attention is that of raising the federal gasoline tax to 4½ cents per gal.

In the long-range aspect of the policy statement, consideration is already given to the probable need for expansion of road construction beyond the terminus of the present program.

A balanced program, the speaker pointed out, must comprehend improvement of the secondary road system. Like the sidings and yards that serve transcontinental railroads, secondary roads form a necessary adjunct of interstate highways.

Federal-Aid was defined as a partnership—not federal work, but assistance to the states with the latter's roadbuilding efforts.

Program Status B. D. Tallamy, retiring Federal Highway Administrator, who has had a leading role in the development of the expanded highway system, indicated that probably no significant changes will be made in the program by the new administration.

However, some implementation may be expected in the area of increasing both primary and secondary mileage.

A review of the work accomplished since July, 1956, testifies to the work of dedicated members of the highway team all over the country. Of the 41,000 miles of interstate roads originally scheduled, about 10,000 miles are already in service. Another 4,500 miles are under construction or contract, and 10,000 more are in planning stages.

● Widely-publicized criticism of the program in the past stemmed from ignorance of the general public on express highway construction design and methods. This led to charges of lavishness, "gold plating," and exorbitance. Completed sections of the network have silenced much of that criticism since the benefits are evident and tangible. Development of industrial and recreational areas following the new highways has fos-

tered greater public confidence in the planners' cost estimates.

● Despite disproportionate publicity on some irregularities uncovered in the program, the effectiveness of safeguards set up against such possibilities has been amply proven. Approximately only 30 people out of 1,500,000 engaged in the program have been found involved in irregularities.

Cost and Design Factors We are engaged in the greatest public works program in the history of the world, Congressman Gordon Scherer (R., Ohio) stated.

● There are some roadblocks, however. For one, the apparent shortsightedness of the oil companies, as displayed by their advertising campaigns against the gasoline tax, overlooks the fact that this tax becomes significant in any pay-as-you-go financing of the road program. And we must *not* go to deficit financing, Congressman Scherer emphasized.

Answering critics who say the program is too grandiose with respect to such factors as road widths, medians, cloverleafs, approaches, etc., the speaker pointed out that these are fundamental to safe highways, and that their elimination on the basis that they are frills—with the objective of stretching out the program—would cost far more in loss of life and money every day of such stretchout.

● We cannot let pressure today blind us to the needs of the future, Congressman Scherer stated. a properly designed and constructed interstate system will save annually about $550 million in tires and gasoline, about $725 million in accidents, and about $825 million in lost time.

A.S.T.M. A. B. Cornthwaite (Virginia Department of Highways, and A.S.T.M.) explained the society's structure and procedures. Although long-established, the society's work is still not familiar to many producers.

Founded in 1898, the group has grown from about 400 members early in this century to about 10,000 members at present. It has concentrated research in testing of materials, and material specifications, but it uses laboratories throughout the country in lieu of setting up one of its own.

Standards (testing) developed by all committees are always subject to current study, for possible revision and updating. One of the newest committees established by the society is concerned with skid resistance of aggregates (a group with which N.L.I. co-operates), and it is one of the most important study groups in view of the current emphasis on road building.

TAX PICTURE

Congressman A. S. Herlong (Fla.), a member of the House Ways and Means Committee, put the responsibility for present rate right where it belongs—on the individual taxpayer.

When the people insist on welfare programs beyond ordinary requirements consistent with the growth of the national economy, they cannot expect tax relief, since such levies are the primary source of needed revenue.

● On the other hand, tax relief is mandatory if the country is to prosper. By 1975 an estimated 225 million people, or 20 million more than at present, will be found in the nation's labor force. To provide one job, it now requires between $14,000 and $17,000 of invested capital. If more venture capital is to be made available, and consequently more jobs for a larger labor force, there must be tax relief from top to bottom.

● Is there a comprehensive plan for tax reduction? Yes, the speaker noted, bills 2030 and 2031 introduced by Congressmen Herlong and Baker, present a proposed reduction schedule over a 5-year period that would bring corporate taxes down from 52 to 47 percent, the 20 percent individual bracket down to 15 percent, and the 91 percent individual down from 91 to 47 percent.

Recent Developments According to John Sapienza, (Covington & Burling), N.L.I. counsel, 1960 witnessed some significant tax legislation. He cited a new law defining ordinary treatment processes, the Supreme Court's consideration of ordinary treatment processes under the old law, congressional and administration concern with expense account reporting, and interest of the same groups in greater depreciation allowances.

Legislation passed last June changed the rules on allowable treatment processing, but not the rates applicable to nonmetallics concerned or the definition of the first marketable product. As examples, fine pulverization has been specifically disallowed, and calcium or magnesium carbonates must constitute 95 percent of the weight of a stone for it to qualify as chemical or metallurgical.

With respect to expense account reporting, Technical Information Release 221 (April, 1960) sets out applicable rules. If an employee is required to report to his management in detail on his expenses, he need not duplicate the same on the government return. Otherwise, a full accounting is required on the latter. A tightening of expense regulations may be expected, Mr. Sapienza noted.

In the area of depreciation, it was stated that the new administration appears favorably inclined toward a more liberal schedule—one which would conceivably spur more capital investment. There are good prospects for submission of such bills in this congressional session, Mr. Sapienza stated.

SPECIAL FEATURES

Although the annual Congressional Banquet took place on an evening during which Washington, D. C., experienced one of the worst blizzards in its history, it still proved to rate high with many senators, congressmen, and other special guests invited by N.L.I. to attend this convention highlight.

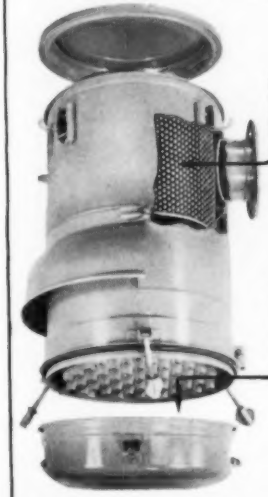
The speaker for the occasion was H. L. Manwaring, a veteran in the U. S. Department of Agriculture. Presiding N.L.I. officer was the group's retiring chairman, Arthur A. Alvis.

An increasingly popular highlight of the annual convention is the Manufacturers' Division Guest Night, at which the producers and their wives are guests of the contributing manufacturers for a buffet dinner and dance.

Don't try this with an ordinary paper filter!

Most paper filters can't stand moisture or humidity... but you can wash the Duralife filter and save money!

Donaclones clean air 10 to 20 times better than oil bath types!



Only 2% of dust reaches Duralife paper filter!

Embossing and pleating provide maximum filtration area. Controlled porosity gives 99.9% dust removal.

98% of dust removed here!

Cluster of Donaclone tubes make up highly-efficient primary centrifugal cleaning stage. Dust is ejected into dust cup for easy servicing.

Washability proves 2 points

1. Moisture does not impair the performance of the Donaclone. Rain, fog, high humidity are no problem. Chemically-treated, special-formula paper is not affected.

2. Donaclones cost less to service. Filter seldom needs any attention because 98% of the dust is removed by the primary centrifugal cleaners. When it does need cleaning, you just dunk it in water and detergent . . . and it's like new. Replacements are mighty infrequent.

Leading equipment builders have switched to Donaclones because they protect their engines better. Install Donaclones on your equipment and get years of extra engine life. There's a dealer near you. Send coupon.

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* NEW IMPROVED

Printed in U.S.A.

ROTA-BLAST BITS!

...engineered for faster blast hole drilling

The box is new! And basic improvements have been made in every size and type of the Hughes "Rota Blast" rock bits. Even the series names have been changed.

New air system and changes in cone bearings in all series assure longer bit life — lower cost per foot of blast hole drilled. In the new tungsten carbide "HH" series, changes in cutter design are increasing bit life as much as 100% in areas where rotary drilling is toughest. In the steel-tooth "H" series, improved hardfacing on the cutting structure and new air system are substantially increasing footage.

Improvements in the "Rota-Blast" line are a direct result of Hughes' continuing research program in the laboratory and in the field to provide bits that will dig blast holes faster and at lower cost.

NEW

Type **S**

Replaces OSC Series
for soft formations
(Calcite, shale, clay)

NEW

Type **M**

Replaces OW Series
for medium rock (Limestone,
sandstone, sandy shales)

NEW

Type **H**

Replaces W7 Series
for hard rock (Siliceous limestone,
dolomite, sandstone, granite)

NEW

Type **HH**

Replaces RG Series
for extremely hard abrasive
rock (Taconite, quartzite)

Your Hughes representative can recommend the "Rota-Blast" bit best suited to your operation. His specialized rotary rock bit experience also qualifies him to offer you assistance in your drilling program.

HUGHES
industrial products
HUGHES TOOL COMPANY • HOUSTON, TEXAS

N.C.S.A. Meeting—Part I

(*Concluded from page* 95)

of these include the job work sheet, quotation form, lost sales file, ready-mix form, order confirmation, plant scheduling form, complaint action report, sales expense form, customer relations file card, daily report in Speed-Memo form, etc.

Highway Needs Our highway program, vital to our economy and its growth and to our national security, is in jeopardy, basically because of lack of understanding of its importance on the part of the public. This was emphasized by Erskine Stewart, Better Highways Information Foundation, in a paper on *Highways Needs—Today and Tomorrow*. Since 1936 the number of vehicles has doubled, but we are actually spending less in real terms on highways than in 1940. The highway program is progressing satisfactorily, already making motor travel quicker, safer, and more economical; but unless drastic steps are taken, it will soon be slowed down by lack of funds.

● Stories of graft and corruption in the highway program have been greatly exaggerated, according to Mr. Stewart. The most serious handicaps have been the efforts to shift costs from one group to another; too many conflicting selfish interests on the location of highways; and, above all, public apathy on this subject. He urged everyone to co-operate in selling the program to the public and described the work the Foundation is doing along these lines. This work includes publicity, traveling exhibits, TV strips, cartoons, brochures, movies, etc., all available to those interested in helping to promote the highway program.

Federal Highway Inspection Federal specifications for aggregates to be used in interstate highway construction have built-in tolerances for size, gradation, etc., which are liberal enough to make them reasonably easy to meet, according to Carl A. Carpenter, Bureau of Public Roads. The aggregates industry associations were consulted in the formulation of these specifications; and producers are urged to help the project along by trying to keep their product in the median. Unfortunately, he said, some producers stay so close to the limits that they are often over, and repeated instances call for special action.

● Contamination of an aggregate usually originates at the pit in the form of deleterious material; at the stockpile it is less serious and easier to control. Segregation usually occurs at the stockpiles; this can be overcome by layering the piles. Sampling for tests is a problem due to segregation in the piles. The best method, said Mr. Carpenter, is to stop the belt conveyor and take a certain length of the load.

Special Features The Greeting Luncheon on Tuesday was, as always, a feature of this convention. The new officers and members of the executive committee were introduced and presentations were made of the N.C.S.A. Safety Contest awards. The featured speaker was Dr. Pierce Harris, pastor of the First Methodist Church, Atlanta, Ga., who gave a thought-provoking inspirational address. Featured at the General Luncheon on Wednesday was J. C. Buchanan, a correspondent for the Miami *Herald*, who has covered developments in Cuba from the beginning of the revolution in 1957. His description of conditions in Cuba was enlightening.

The big social event of the meeting was "A Night in The Tropics," featuring outstanding entertainment and dancing. Cool weather that night made it necessary to hold this event indoors and to eliminate some of the planned features.

There was, as usual, an excellent program for the ladies, ably and graciously managed by the official hostesses—Mrs. George D. Lott Jr.; Mrs. Charles Coburn; and Mrs. Clarence Camp II.

N.C.S.A. Meeting—Part II

(*Concluded from page* 98)

be of great value to all quarry operators who are plagued with real and fancied complaints on the results of blasts.

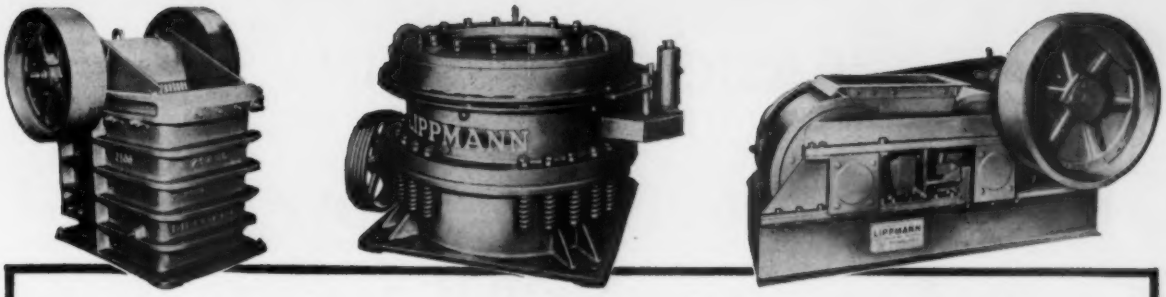
This program, said Dr. Obert, has now been under way for 18 months, and considerable progress has been made. The chief aims are (1) to determine a propagation law for ground-borne surface vibrations and (2) to establish damage criteria for various types of structures. There is little available information on the latter subject, and that obtained will be very helpful in establishing blasting codes. In 1960 previous criteria and commercially available seismographs were evaluated; design criteria were developed for portable seismographs; and studies of procedures, seismic effects, and the propagation law were made. Previous investigations included testing of all instruments to be used. Tests were made at two locations, one of them a quarry in Iowa, and a report on this work will soon be published.

Safety

The presentation of the 1959 N.C.S.A.-Bureau of Mines Safety Contest Awards was made by James Westfield, assistant director, Health and Safety, U. S. Bureau of Mines, at the Greeting Luncheon. A total of 59 plants won these awards.

Awards The *Explosives Engineer* Award for operating the greatest number of days without a lost-time disability work injury, was won by the Kimballton, Va., quarry, Standard Lime & Cement Co. Div., American-Marietta Co. This plant was the winner in Group I (plants working 200,001 man-hours or more), with a total of 451,317 man-hours worked. The winner of Group II (100,001 to 200,000 man-hours) was the Dan Quarry, Martinez, Ga., Superior Stone Company, with a total of 117,333 man-hours.

The Group III (50,001 to 100,000 man-hours) winner was the McLeanville Quarry, McLeanville, N. C., of the Superior Stone Co., with 99,900 man-hours. The winner in Group IV (30,001 to 50,000 man-hours) was the Knoxville City Quarry, Knoxville, Tenn., Vulcan Materials Co., Lambert Bros. Div., with 46,621 man-hours. The award for Group V (30,000 or fewer man-hours) was won by the Franklin Mine, Franklin, Tenn., Vulcan Materials Co., Lambert Brothers Div., with 28,736 man-hours.



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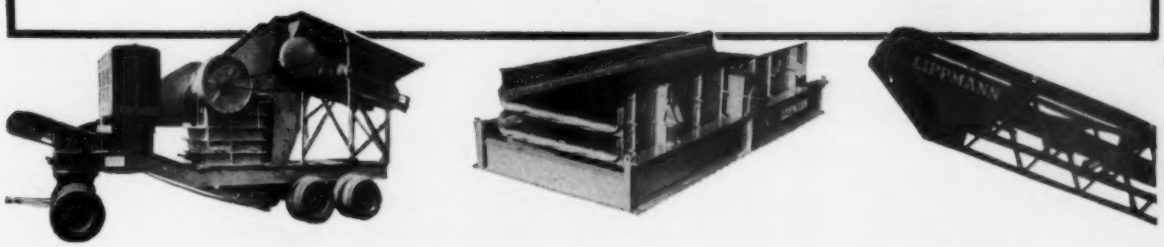
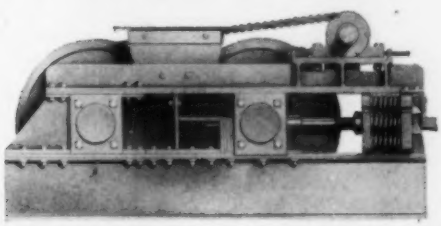


Here are four typical examples:



Exerts up to 30 times more pressure . . .

than ordinary roll crushers. Special Lippmann control design allows accurate adjustment up to 1/64 inch. In 30 years of operation there has never been a shaft or frame failure in a Lippmann roll crusher.

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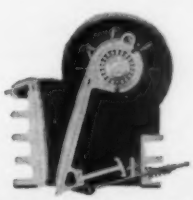
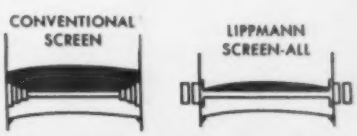
jaw, roll and gyratory crushers • impactors
pulverizers • conveyors
vibrating screens • apron feeders
portable crushing and washing plants

L-L-61

100% more stockpile capacity:
Exclusive "wrap drive" on Lippmann portable conveyors places *entire* drive mechanism at conveyor's *low-end*. Resulting weight concentration lets you use 25 to 33% shorter wheelbase without loss of stability . . . in turn doubles volume you can stockpile without re-positioning.



41% higher crusher output:
According to published data you can check, Lippmann Grizzly-King jaw crushers give you up to 41% more rated output, size for size, than average of competitive makes. Reasons: up to 37% deeper jaw dies, 16% greater eccentric throw, extra-heavy-duty frame design.



Space-saving screen design:
Exclusive Lippmann design positions bearings just 7/8" apart and outside of screen body . . . reduces shaft bending moment to practically zero and saves up to 8" of head room between decks. Means greater all-around screening efficiency and longer service.

BASIC FACTORS IN

Benefit Programs For Employees and Executives

This is the third in a series of articles designed to give producers a better understanding of the many factors involved in employee and executive benefit programming. The first article, appearing in the January, 1961, issue, covered group life insurance and hospitalization. The second article, appearing in the February, 1961, issue, discussed "Disability Salary Replacement" for executives and key personnel. This series has been prepared with the co-operation and assistance of Donald Shepherd and Company, Inc., benefit plans consultant to the National Sand and Gravel Association, National Ready Mixed Concrete Association, National Industrial Sand Association, and National Concrete Masonry Association.

Whether you are a member of an industry association or not, we believe that through a better understanding of the subjects covered in this series, you, as a producer, will be assured of getting the maximum advantages from any program you now have in effect, or any which you may contemplate establishing.—The Editors

Estate Planning

WOULD YOU feel it important to spend some time in the proper planning of your estate if, as a result of a few hours time spent now, you could increase the net value of your estate to your family by 25 percent? To illustrate let us examine the chart on page 111.

There are three important ways to reduce federal taxes on the typical estate mentioned in the chart: (1) by eliminating the unnecessary second set of taxes on certain property going eventually to the children; (2) by taking advantage of the 50 percent marital deduction made possible by the Revenue Act of 1948; and (3) by using gifts.

Four different *methods* of distributing an estate give four different *dollar results*. Further detailed explanations of the four plans are given in the charts shown on pages 112 and 113.

Many social and economic changes have taken place in the United States since the turn of the century. During the last three decades in particular, there have been rapid and important developments that have affected the ownership of property and the manner in which it is created, conserved, and distributed. The cumulative effect of these changes has rendered obsolete the way in which property was left at death. These circumstances have given rise to a method of financial planning called estate planning.

In general, the purpose of estate planning is to provide maximum security and financial protection for family members through maximum conservation and proper distribution of the property owner's estate. In most cases this can best be accomplished by leaving whatever property is involved in the most practical and economical manner, so that it meets the desired objectives of the owner.

When estate planning has been done properly, all assets of the property owner's estate, including life insurance, will have been coordinated into a single economic unit. The final plan that is adopted will depend upon the property owner's desired financial objectives for his family, and upon the amount and nature of the property involved.

A great many individuals feel that the need for proper estate

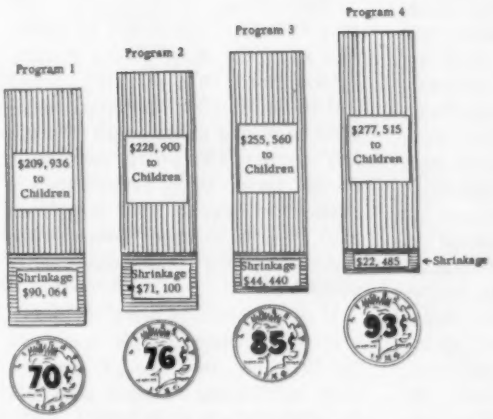
planning is dictated by substantial wealth. Unfortunately, nothing could be farther from the truth. In many cases, a carefully planned estate is of much more importance to the owner of a modest estate than to an individual who has created substantial wealth.

In planning the estate of a wealthy person, the primary objective might well be to conserve and preserve capital. However, in considering the arrangements for the owner of a moderate estate, the proper plan might well mean the difference between a reasonable degree of security on one hand and a lowered standard of living or even family hardship on the other hand.

The federal income tax rates have progressively increased to a point at which they have become a distinct barrier to the accumulation of substantial wealth. At the same time, another tax, the federal estate tax, has the effect of reducing substantially the wealth of past accumulation. The investment and management of property has become more difficult and highly specialized. New laws and regulations have had a considerable influence upon wills and trusts. Because of these and many other regulatory changes, more and more people are turning to estate planning to conserve their property and to protect their families.

Many persons have estate problems of which they are not aware. In this area estate planning plays a very important role. One of its principal functions is to sum up the facts and reveal the problem or problems the heirs of the estate owner are likely to face.

The first step in estate planning is to marshal the assets that are involved and to appraise their value. That is to say, what does the individual own, and what it it worth? Many property owners have never listed their entire holdings or attempted to estimate the value of their estates. In some cases, the individual may know the exact value of certain assets, such as marketable securities, but may neglect to take into account other assets such as his home or his life insurance. In many cases the value of a major asset—income-producing real estate, stock held in a closely held corporation, or some other business interest—may be very difficult to determine. Property owners are often surprised at the worth of their estates after a proper analysis has been made.



A man is worth $300,000. His wife owns no property in her own name.

His first estate objective is to provide adequate income for his wife as long as she lives and he desires that the property is then to go to the children.

The desired estate objectives can be achieved in various ways, but . . . the cost varies widely.

NOTE: For simplification, only Federal Estate Tax is considered in the examples on pp. 112, 113. A portion of the state taxes may be absorbed in the Federal Estate Tax. Principal value of investments is assumed to remain unchanged. Some costs are necessarily estimated throughout, but they are fair averages. Administration expense, in each case, includes both executor's and legal fees.

The value of the assets in an estate is extremely important because the federal estate tax is measured by the fair market value of all of the property that the individual owns, including his life insurance. By arriving at a realistic estate valuation, it is possible to estimate the various state and federal taxes that will have to be paid, as well as other administrative costs necessary to settle the estate at death. Estate planning, therefore, discloses the liquidity requirements of the estate and reveals whether or not liquidity is a problem.

When the nature and value of the assets are known and the taxes and other costs of settling the estate have been estimated, the problems of how to dispose of the property at death and how to use it to maximum advantage usually become more evident. For the first time, a property owner will have a fairly accurate picture of how much property will be available for his dependents after his estate has been settled.

In many cases, a mere statement of the objectives or a realization of the problem is all that is necessary to indicate the solution. In all instances, however, a practical solution must necessarily depend upon the facts, including the character of the assets involved, the number and needs of the beneficiaries, and the specific wishes of the property owners.

If an estate is likely to have insufficient liquidity, the recognition of this fact emphasizes the need for its solution. In such a case, the solution often amounts to finding a way to provide the estate with additional cash. It may be wise to dispose of some of the non-liquid assets, such as investments or real estate and have them converted to cash, to improve the position of the estate. In some cases the necessary cash liquidity may be furnished by the purchase of additional life insurance. Often existing life insurance policies may be changed, to furnish the estate with the required liquidity.

In addition to finding a way to provide the estate with more liquid funds, the problem of liquidity can be solved or at least lessened by minimizing the various estate taxes. This can be accomplished through the use of marital deduction provisions under the law for husband and wife. A program of gifts can often minimize current and future tax burdens. Or the use of a flexible trust under will may answer these

problems of tax and liquidity.

In these industries most of the businesses are in the form of family corporations, and a substantial part of the estate is often made up of the business interest. Estate planning helps to emphasize the importance of deciding upon a practical solution for the disposition of an asset such as this at the time of death.

If the facts and circumstances indicate that the business should be sold, who are the potential buyers? If the potential buyers are in the business or close to you, is it desirable to consider a buy-and-sell agreement? Remember that a good buy-and-sell agreement will arrange for an orderly transfer of a business asset into an income-producing asset for your family.

Should the facts indicate that the business interest should be retained after the owner's death, plans should usually be made to provide the liquidity that will be needed for taxes. Moreover, provision should be made to develop future key personnel to manage the business for continued success.

The average estate takes a lifetime to create, but it will be settled in a relatively short period of time. Throughout this country, much wealth and family security are sacrificed each year at the death of property owners. Obviously, individuals do not intentionally reduce the security and benefits that they want their families to enjoy. What is the explanation for these unfortunate situations?

If positive action were to blame, it might be rather simple to correct the situation, since people are usually well aware of their acts and the goals they wish to achieve. Unfortunately, the cause of the difficulty is much more obscure. Many of the problems that are encountered by the heirs are the result of inaction on the part of the estate founder. A person may well be guilty of inaction, and not even be aware of it.

Estate planning gives the property owner more adequate appreciation and understanding of his estate problems than he had before. It enables him to keep his property in a more orderly condition and to avoid pitfalls that may otherwise jeopardize the future welfare of his family. The individual becomes conscious of conditions and new developments which may adversely affect his property or his family, and he is usually in a position to determine at what point enough changes have occurred to justify a review and a possible modification of his current estate plan.

For the property owner who wants to make the most of what he has and who desires to provide the maximum protection for his property and security for his family—financial estate planning is vital.

What steps should an individual take in analyzing his affairs so that he can set up a plan which will most effectively carry out his wishes for his family? There are four (and possibly more) members of the so-

PROGRAM 1
(Saves Marital Deduction only)

Husband leaves outright to his wife in his Will $300,000

Subtract:
Federal estate tax $16,220
Administration expense 12,000 28,220

Wife receives $271,780

She uses income only, and leaves property intact to children in her will.

Subtract:
Federal estate tax $50,973
Administration expense 10,871 61,844

Children receive $209,936

Less any additional shrinkage caused by additional state taxes

Under this program the children would receive:

$ 88,771 from an original estate of $ 100,000
$ 123,135 from an original estate of $ 150,000
$ 153,582 from an original estate of $ 200,000
$ 209,936 from an original estate of $ 300,000
$ 317,664 from an original estate of $ 500,000
$ 574,398 from an original estate of $1,000,000
$2,084,447 from an original estate of $5,000,000

Note:
Where Marital Deduction is taken, wife also receives income for life on amount of estate tax deferred until wife's death.

PROGRAM 2
(saves unnecessary second set of taxes only)

Husband leaves in a trust for the lifetime benefit of his wife $300,000
Principal at her death to go to children.
(Trust does not qualify for marital deduction)

Subtract:
Federal estate tax $59,100
Administration expense 12,000 71,100

Wife receives income from husband's estate during her lifetime.

Children receive $228,900

Less any additional shrinkage caused by additional state taxes

Saving to family

$18,964

Compared with Program No. 1, the most expensive way

Program No. 2 accomplishes essentially the same ends as No. 1, yet where this program is used:

The saving is $ 3,149 on an original estate of $ 100,000
The saving is $ 4,645 on an original estate of $ 150,000
The saving is $ 8,118 on an original estate of $ 200,000
The saving is $ 18,964 on an original estate of $ 300,000
The saving is $ 42,236 on an original estate of $ 500,000
The saving is $ 96,902 on an original estate of $1,000,000
The saving is $411,153 on an original estate of $5,000,000

called "estate-planning team" who are available to every individual to assist him with the formulation of an appropriate estate plan: his family attorney, his accountant, his insurance advisor, and a trust company representative. Many persons have found that a good trust company will give impartial advice at no cost, thereby giving the individual a free education so that he, as an intelligent man, can make some preliminary decisions before he directs his attorney to the type of arrangement which he wishes to follow. Each member of the estate planning team will help the individual to ascertain the facts necessary to put a sound plan into operation.

Donald Shepherd and Company, Inc., through its local representatives, will be pleased to work with you and the other members of your estate-planning team, to the end that you will be assured of receiving the maximum help in creating conserving and distributing your estate values. END

Dundee Distribution Center Cited by S. Chicago C. of C.

The Distribution and Service center recently built by Dundee Cement Company on the Calumet River in Chicago has been recognized by the South Chicago Chamber of Commerce with an award for its land rehabilitation program.

The facility received a citation and a U. S. Savings Bond for major landscape improvement and confidence displayed in the continuing growth of South Chicago.

Highway Courses at Purdue Offered by P.C.A. Fellowships

Twenty fellowships to the graduate school of Purdue University have been made available by the Portland Cement Association for the summer session starting June 19 and ending August 11. These fellowships will be made available to qualified instructors and members of civil engineering departments having special interest in highway planning, design, and portland cement concrete technology. In addition to payment of tuition, fees, and transportation expenses, fellowships also include a cash stipend of $700.

The study program will include courses in concrete and aggregates, highway planning, and economics and pavement design. It will be supplemented by a symposium on highway engineering.

Application forms and other information can be obtained from Professor K. B. Woods, School of Engineering, Purdue University, Lafayette, Ind.

Employees of the Columbia Cement Corporation plant near East Fultonham, Ohio, have completed their sixth accident-free year during the last eleven years on December 31, 1960. The six years represent 8,222,932 man-hours without a lost-time accident.

PROGRAM 3
(saves both Marital Deduction and second, unnecessary set of taxes on as much of property as possible)

Husband leaves in two trusts		$300,000
Administration expense	12,000	
	$288,000	
Amount placed in Marital Deduction Trust A*	$144,000	
Subtract:		
Federal Estate Tax on wife's death	16,220	
	$127,780 (1)	
Amount placed in Trust B (similar to trust in Program 3)	$144,000	
Subtract:		
Federal Estate Tax on husband's death	16,220	
	$127,780 (2)	
Children receive (add 1 and 2)		$256,560

Less any additional shrinkage caused by additional state taxes

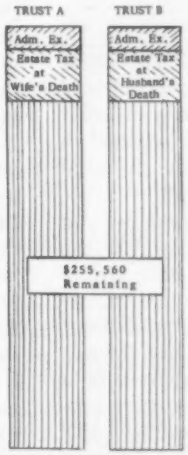
Saving to family

$45,624

Compared with Program No. 1, the most expensive way.

Program No. 3 accomplishes essentially the same ends as No. 1, net where this program is used:

The saving is $ 7,229 on an original estate of $ 100,000
The saving is $ 19,425 on an original estate of $ 150,000
The saving is $ 30,258 on an original estate of $ 200,000
The saving is $ 45,624 on an original estate of $ 300,000
The saving is $ 72,936 on an original estate of $ 500,000
The saving is $145,402 on an original estate of $1,000,000
The saving is $875,953 on an original estate of $5,000,000



*This trust gave wife income for life, payable at least annually. She had general power of appointment of principal by will. Assuming she does not exercise this power, under the terms of the trust, the children receive the property at wife's death.

PROGRAM 4
(saves both Marital Deduction and second, unnecessary set of estate taxes and takes advantage of gift tax savings)

Husband's estate		$300,000
25% of estate placed in Gift Trust* for children, with wife's full consent. One-half of remaining adjusted gross estate placed in Marital Deduction Trust A, remainder in Trust B to save second, unnecessary set of estate taxes (see Program 3)		
Subtract:		
Gift tax	$ 488	
Federal estate tax on husband's estate (Trust B)	6,508	
Federal estate tax on wife's estate (Trust A)	6,508	
Administration expenses	8,981	22,485
Children receive		$277,515

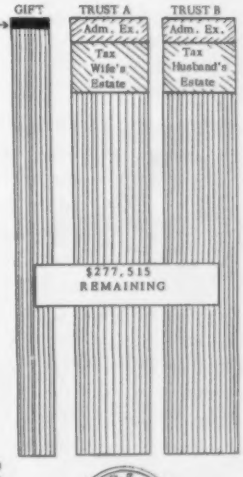
Less any additional shrinkage caused by additional state taxes

Saving to family
$67,579

Compared with Program No. 1, the most expensive way

Program No. 4 accomplishes essentially the same ends as No. 1, yet where this program is used:

The saving is $ 8,229 on an original estate of $ 100,000
The saving is $ 22,365 on an original estate of $ 150,000
The saving is $ 38,978 on an original estate of $ 200,000
The saving is $ 67,579 on an original estate of $ 300,000
The saving is $ 110,458 on an original estate of $ 500,000
The saving is $ 213,304 on an original estate of $1,000,000
The saving is $1,351,425 on an original estate of $5,000,000



Note:
Husband and wife agree, under this program, that the benefits obtained offset the disadvantage of taking the gift (and income from that amount) out of the husband's estate. Gifts, in trust or otherwise, however, should be made only after most careful consideration with the family attorney and an experienced trust officer.

*Income from this amount comes out of husband and wife's top income tax brackets each year, an additional saving.

Within weeks after this crushing and screening installation was placed in operation it was supplying contracts for base course material and county road material. It is the first crushing plant operated by the owners, who had formerly processed only riprap.

Fort Calhoun Stone Company

• Nebraska producer's first crushing plant serves Missouri River area

By BUREN C. HEROD

ANOTHER ON THE SPOT report

DURING its historic years as a major commercial route for flatboats, trappers, and later more modern river traffic, the Missouri River has seen many and varied business developments along its winding miles. One of the latest of these is a new member of the crushed stone industry, the Fort Calhoun Stone Company.

In setting up their new plant at Fort Calhoun, Nebr., a short distance upstream from Omaha, the owners of this new company envisioned a healthy future in an area that for 100 miles between Omaha and the South Dakota border had only two sources of crushed stone supply. With a different organization already engaged in contracting for flood repair, etc., at various points along the river, the founders of Fort Calhoun Stone acquired a property at Fort Calhoun and opened a quarry from which they extracted riprap for their river work.

The quarry was opened for that purpose in June, 1957. By 1959, the potential for crushed stone aggregates became apparent, particularly in view of the availability of water transport on the river, and thought was given to the installation of a crushing-and-screening plant. Lacking any extensive experience with this type of operation, the owners discussed general plans and quotations with the Anderson Equipment Company, Inc., Omaha.

On the basis of those discussions, a 200-t.p.h. Pioneer installation was acquired from the Anderson firm, and installed according to a simple and compact layout developed by the dealer and the manufacturer. The new plant was placed in operation for the first time last July, and within a matter of weeks it had already begun to supply contracts.

In view of the fact that the deposit, as noted later, improves with depth, future production will undoubtedly be expanded to include other types of materials meeting more rigid specifications.

The plant site and quarry area are situated in a tract about a mile and a half long on the west bank of the Missouri River. Some unusual conditions exist in the tract, and despite the potential difficulties inherent in these conditions, operating methods were set up to counteract existing and potential problems.

For one thing, the property is in an area that had been the bed of old Lake Calhoun, and consequently the overburden consists of about 30 ft. of silt and gumbo. This material was removed during the initial development of the quarry area to expose the formation. Subsequently concentration was on excavating for depth in lieu of further lateral extension. This was due to the fact that it was found more feasible to remove intermediate layers of shale

between the limestone, than to remove all of the gumbo above the available horizontal area of top strata first and work it to its lateral limits. This procedure expedited development and held down stripping cost factors. It also took advantage of the fact that the stone quality improves with depth.

However, the extensive requirements in recent months for riprap on a Missouri river bank stabilization project necessitated opening another section in the upper strata.

An anticipated second problem that fortunately failed to materialize stems from the fact that the quarry is only about 75 yards from the river, and from early development on, the workings were carried below river level. Currently, the floor of the quarry is about 75 ft. below normal river stage. The water problem was anticipated, and an excellent water control system was provided. The alluvial material used to dike all around the quarry rim in a drainage pattern causes surface water to drain to a sump at an upper level. Another sump was dug in the lowest level of the quarry to collect ground water seepage. There is very little of the latter, surprisingly, and the workings are generally quite dry.

When the property was first prospected, core drilling disclosed more than 120 ft. of available material. In vertical section, the depth is comprised of alternate strata of limestone and shale, each averaging between 10 to 15 ft. in thickness. Currently, two ledges are being operated—one at a depth of about 90 ft., and the other at a higher level, where intermediate strata are being worked out to the lateral limit.

In the section being opened to supply the stabilization project, stripping operations are being carried out with a pair of DW 21 Caterpillar units, a TS 14 and two TS 24 Euclids, an HD 21 Allis-Chalmers 'dozer, and another HD 21 pusher, a Koehring 605 shovel, and three TR 200 Allis-Chalmers rock wagons.

Drilling of blastholes on the ledges is done with Gardner-Denver wagon-type units fitted with 2½-in. bits, and supplied with air by G-D compressors. Hole spacing varies

(*Concluded on page* 121)

The intermediate ledge in this view of the quarry is being worked back to the high wall. One of the end-dump wagons is being loaded as another returns from the plant. At the lower left is the bottom sump, a part of the water control system.

In this view looking toward the lowest ledge being operated, one of the scraper units is being loaded from one of the shale strata for transport of that material to a waste area.

Two wagon-type drills and companion compressors are used to sink 2½-in. holes in the two ledges. Enough holes are sunk to bring down about 2,000 tons of material per shot.

269 consecutive shots in a populous area without a complaint ...

THAT'S ...

Controlled Blasting

By BUREN C. HEROD

POSSIBLY the majority of crushed stone operators have not faced the frequent controversies arising from blasting that were encountered by management of a leading Midwestern plant—but without question, they will. And many who have had comparable difficulties have unfortunately been inclined to rely on the self-righteous—and increasingly ineffective position, "We were here first." Both groups could take a page from the record detailed in this report.

On the north, east, and south of the long-established quarry operation there are many residential and light industrial neighbors; and on the boundary of the property is an arterial highway. The term neighbor is defined as "a person or thing that is near another"—in this case the neighbors are not just near, they're *close*, many within a few hundred feet.

Like virtually all quarry operations, this one was "here first." Such a happy situation was inevitably superseded by steadily increasing utilization of adjoining formerly unimproved real estate.

Thus the problem—one of blasting complaints—was born, and grew in direct proportion to the influx of neighbors. While the problem is common to a large number of quarrymen, the method of attacking it, as followed by company management, displays a more novel and logical

This view across the quarry floor (taken from the northwestern section of the quarry, the site of the first blast described in this article) shows the southeastern face in the stratum currently being removed. The closeness of some neighbors is evident in the two-story building in the background at the top of the quarry.

1—These drill rigs sink 6¼- and 6½-in. holes. Penetration rates average 22 f.p.h. in a formation ranging from 27 to 33 ft. thick.

philosophy than is usual.

In the broadest terms, the approach is based on careful attention to planning, preparation, and carrying out of every shot—sometimes three a day. Behind this generalization lies unusual care in every single step of the program from drilling to detonation—all aimed at reducing the perceptibility of a blast.

Have results been commensurate with the effort? As many as 5, 6, or 7 complaints had been received on various shots until the new program was put into effect. From its inception, there were *269 consecutive shots* before a complaint was received! This is an obviously eloquent testimonial to a company official's observation that an operator "must be willing to disregard old methods, if he's going to keep his head above water."

This striking improvement was not achieved by sitting on dead center. Many months of frequently frustrating experimental work were involved in the development of the program, which has now been in effect for about 2 years. The experiments were aimed at determining drill hole patterns, explosives, and loading factors in a blasting procedure that would cause no complaints, and thus set a firm standard

2 (Above, right)—Preparations for loading. The cartridges stacked by each of the 22 holes for this shot are color-coded to assure the proper loading sequence. Note the piles of ¼-in. chips, a premium plant product, which are used for decking and to cover the detonating lines on the surface.

3 (Right)—The first cartridge, with primer on the downline just above, is started into a hole.

4—Another cartridge goes into the hole. The workman holds the reel of the detonating cord attached to the primer on the bottom cartridge; he will stop the loading if any interference is felt on the line. Another member of the crew, center background, has the tape measure ready for checking the charge depth at various levels.

5 (Above)—A knot connecting one of the MS caps with a trunk line is started and—6 (below)—is completed. The connectors are color-coded and wrapped with red tape as a safety precaution, as described in the text.

7—A downline is secured to the trunkline. The connection is made with a triple-wrapped half hitch, and is within an inch of the top of the hole. Tails are cut close to preclude a loose end falling across another line and causing a misfire.

for future blasting operations.

Despite many years of quarrying experience, the firm's officers were not reluctant to seek help in other quarters. As an example of the forethought that went into the project, one of the first steps taken was to have physical determinations made on a representative sample of the dolomitic limestone as it occurs throughout the quarry.

Based on these characteristics, an explosive was sought that would give consistent, maximum displacement; as the superintendent stated, "I wanted the material to move out along the floor, and not upward and out." The factors of speed and explosive density, within acceptable cost limits, were paramount. Although cost considerations were important in the development of the program, there was no penny-pinching if a few more cents would provide the desired results.

With quotations and recommendations at hand from several major manufacturers, along with information from test blasts with different materials, management decided to standardize on explosives supplied by the Trojan Powder Company. The latter had formulated a special explosive for this operation. The assistance and co-operation of the technical and development division, in addition to that of the field representative, has been cited as a major contribution to the success of the current program.

In the experimental work that was carried out, involving both cheaper and more expensive powders, it was found that 135 lb. of explosive per hole was the upper loading limit at which subsequent blasting drew the least complaints or none. With this loading factor established, drillhole patterns were varied in an effort to find one that would comprehend maximum efficiency and performance of the charge. This resulted in an average pattern of 10- by 12-ft. and two rows of holes.

With these two factors established, the development of the program was well on its way. However, other points that were less obvious —but nevertheless important—were also given careful consideration. These included the crew and operational procedures. For two sound reasons—efficiency and labor cost —the crew was established at the maximum of four men (including the superintendent).

The presence of the superintendent on the blasting crew stems from his emphatic belief that whoever has been assigned the responsibility for blasting should be in direct contact and in constant control of every phase as it occurs in the program sequence. Further, the man who has been assigned this responsibility is the one who should be called upon to answer any complaints arising from blasting since he is the only one who is familiar with all factors present in any given blast. Obviously, this precludes potential embarrassment due to possibly conflicting statements made by more than one company representative.

In addition to the foregoing, which has the elements of both operational and administrative policy, the strictly operational procedures involved in the blasting program are detailed in the following paragraphs.

To begin with, it was pointed out earlier that the experimental work had indicated that a 10- by 12-ft. drillhole pattern was most effective for the established powder factor. Only infrequently is that pattern varied, and then only to a minor extent, to meet some unusual condition in the virgin formation and to take advantage of a particular jointing system in the stone.

Advance drilling may be equivalent to the hole requirements of two more shots subsequent to a given blast, but the end holes for each blast are drilled, just preceding the blast, so that they will not be lost in the shot ahead. After each blast, a series of holes in addition to those already drilled are spotted in accordance with desired face direction, material needs, etc.

On the average, 22 to 24 holes are maximum for a given blast. Below that average the number of holes may vary, but they are drilled on the standard pattern. Currently, two faces are operated—one in the northwestern section of the quarry, and the other across the southeastern section. As seen in accompanying photographs, the formation is quite competent, with medium bedding, and generally horizontal. A slight dip is found to the western section, but it has posed no difficulty with the floor.

Both current faces are in the

8—With all holes charged, the trunklines and connectors are carefully covered with chips.

9—The shot is ready. Surplus blasting supplies are removed, and the men are cleared from the area before the blasting machine is hooked up. The superintendent uses a hand airhorn to warn shovel operators and truck drivers to stay clear.

same stratum, and at present the northwest face averages 33 ft. in thickness and the southwest exposure about 27 ft. Drill holes are sunk by a pair of Ingersoll-Rand Drillmasters and a Joy 225 truck-mounted rig. The former units are equipped with 6½-in. bits, and the latter with 6¼-in. Penetration rates average 22 f.p.h.

Before the blasting crew is ready to start on any given day (the operation is carried out as frequently as four days per week, and from 1 to 3 shots a day), the explosives are stacked beside each hole in the shot. Only the minimum amount of explosives are stored at hand. Due to the proximity of housing and other structures, the storage permit allows only 500 lb. Those required for regular blasting operations are trucked from a Trojan field magazine.

Charging of the holes has been made almost foolproof by the use of color-coding on cartridges of explosives, and of accessories. Three types of Trojan cartridges are used —TL-550, TL-651, and TL-565, all of the ICC-23G style. The first is the "prescription powder," as the superintendent describes it, which was specially formulated for this application. All cartridges of this type are coded with red. The TL-651 is a non-cap-sensitive explosive, of 55 percent strength, and is coded with black. These two types are in 25-lb., 5½-in. cartridges. The third type, TL-565, is not colored, which in effect also provides a coding, and it is supplied in 12½-lb., 5-in. cartridges that are used as the final stick.

The Du Pont 9MS and 17MS connectors are also coded green for the former and yellow for the latter, and are further wrapped in pairs of the same type with red tape. The pairing provides a safety factor; if one connector is damaged, there is still little possibility of a misfire. The red tape wrapping is added as a danger sign. The company's safety program has educated the rest of the crew to call for a member of the blasting crew if one of the connectors is found lying on the quarry floor.

Other blasting accessories include Ensign-Bickford reinforced Primacord, Trojan No. 4 primers, and a blasting machine.

"Uniform loading is fundamental to controlled blasting," the superintendent emphasized, and both he and the Trojan representative who regularly assists with blasting operations consider a tape measure the most important tool in the entire procedure. Without knowledge of "where you are in the hole with the charge," they say, a controlled blast is impossible.

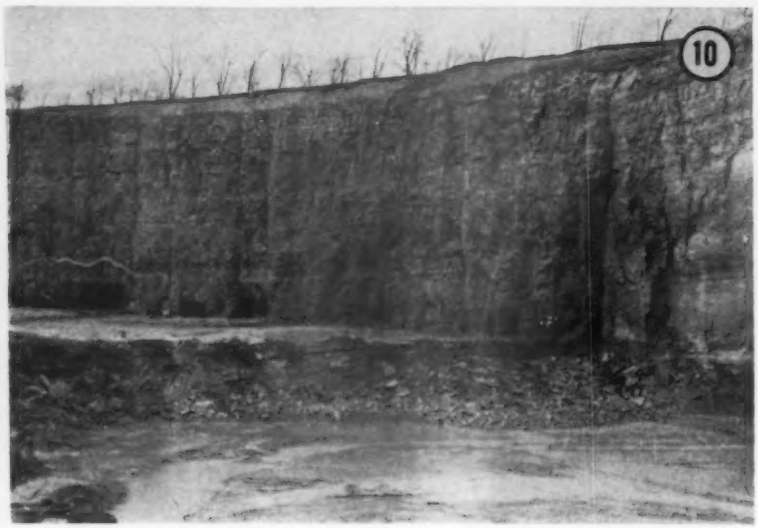
A description of the procedure on the northwest face, following, is representative of normal operation; and it also applies to the current southeast face, except that the shallower depth of the latter requires one less intermediate cartridge of TL-550.

With the hole depth first checked by tape, the bottom stick—TL-651 —is fitted with a primer, threaded over the Primacord, and lowered to the bottom. This is followed by a red-code stick of TL-550, and then another black-coded stick of TL-651. These are topped with a 3-ft. deck of ¼-in. chips, and the depth is again taped.

A TL-550 cartridge is then placed in the hole, followed by another 3-ft. deck of chips, and the depth is again taped. Another cartridge of the same type is placed, topped by a 3-ft. deck, the hole is again taped, and then the final cartridge—a 19-in. stick of TL-565—is placed. This is topped with stemming to the top of the hole.

The ¼-in. chips, which are actually a premium plant product, are always used for stemming in lieu of drill cuttings since they will not bridge in the hole in the presence of water. Adequate piles are placed by each hole before loading operations for both stemming and later coverage of detonating cord trunk lines.

During the entire process of loading a hole, the reel of Primacord for the down line is held by the superintendent. With a hand on the



10—An instant before the shot on a part of the northwest face.

11—The shot is fired, and the material moves out perfectly.

12—The slight amount of smoke clears away, and not a fragment of fly rock is visible.

cord, he can feel any interference with the line as the hole is loaded, and can have remedial steps taken to avoid damage to the cord and potential misfire.

With all holes loaded for a given shot, the down lines are cut off close enough to the top of the holes so that when tied to the trunk line —with triple-wrap half hitches— there is no excess cord hanging loose and consequently no danger of cutting across another to make a "short circuit." The trunk lines are thus secured within an inch of the top of each hole.

The Du Pont MS connectors, in pairs, are secured with square knots to the trunk lines with the 17 MS used along the front row of holes, and the 9 MS units for the back row. The hookup delivers 9-8-9-8-9 etc. delay intervals.

When all holes are hooked up— and checked—the Primacord trunk lines are covered with more stemming chips to reduce the noise of an otherwise exposed propagating explosion along the cord. Prior to the final step the men and all surplus blasting supplies are removed from the area—then the blasting machine is connected.

The pay-off for all the care and attention to detail in these procedures is both satisfying and well earned. In addition to the virtual elimination of complaints which spurred the development of the program, the excellent displacement of material and controlled heave are prime operating benefits.

Another impressive point is the complete absence of discernible fly rock. In the shots witnessed and photographed by the writer—one with 15 holes and the other with 22 holes—this, along with the absence of shock, was one of the most striking factors. Some of the photographs show equipment standing rather close to the area of the blast. This is not a disregard for the equipment, but testimony to the

(*Concluded on page* 138)

Fort Calhoun Stone Co.

(*Concluded from page* 115)

between 5 and 6 by 8 and 9 ft., and enough holes are sunk to furnish about 2,000 tons of material per shot. The charge is made with Du-Pont 40 percent Extra Gel, which is detonated with millisecond-delay caps. Yield averages over 3 tons per lb. of explosive.

Two Koehring shovels, a 1-yd. 405 and a 1½-yd. 605, are used to load out in the quarry. Haulage is handled with 18-ton Allis-Chalmers TR200 end-dump motor wagons. In addition, Cat DW 21 scrapers used in overburden removal also remove shale layers and transport this material to a waste area.

If the quarry-run stone is destined for barge shipment of riprap, the end-dump haulage units discharge into the barges from a ramp above the barge docking area, or a part of the equipment may be so assigned while the rest of the units are hauling directly to the feed hopper of the new Pioneer crushing-and-screening plant.

Presently set up to remove three fractions between 1¼ in. and dust, the screening phase is closed-circuited with the primary breaker. With the future installation of a secondary, the over-all capacity will be increased about 25 percent to meet anticipated market growth. Drives for all components in the flow are provided by Century electric motors, through Dodge reducers, and all conveyors are equipped with Boston Woven Hose belting.

A closeup of the dual rotor impact breaker which is presently closed-circuited with the screening phase. The plant design comprehends future addition of a secondary unit which will increase input capacity, and expansion of the screening phase, with the minimum of change in the present setup.

As received in the hopper of the 42x12 apron feeder, the material is delivered to the dual-rotor Cuber Senior impact breaker. Driven by a 200-hp. motor, this crusher (in its present closed-circuit setup) delivers about 200 t.p.h. of minus 1½-in. material. The latter is discharged onto a 36-in. belt and carried to a surge hopper.

From this surge, crusher-run is drawn onto a 24-in. by 50-ft. belt and conveyed to the 5- by 14-ft. triple-deck vibrating screen. Only two decks are in use to make the fractions now in production; these are fitted with 1¼-in. and No. 4 screencloth. (A gate at the discharge point of the screen feed conveyor permits directing the entire flow of crusher-run to a truck-loading conveyor.)

The fraction retained on the top deck of the screen is chuted to an 18-in. by 50-ft. belt for return to the primary breaker in closing the oversize circuit. From the bottom deck ,the 1¼x4M fraction is discharged to an 18-in. by 30-ft. lateral stockpiling conveyor. The bottom deck throughs are received on the 24-in. by 30-ft. truck-loading conveyor mentioned previously as receiving all crusher-run when desired. As the need for other fractions develops, the intermediate deck of the screen will be fitted with cloth; and provision has been made for the installation of another lateral stockpiling belt to handle the new split.

All crushed stone sales from the plant are loaded into customers' trucks, which are weighed out over a 40-ton Murphy platform scale. At present, no barge shipments of aggregates have been made, but potential demand for that method of shipment can be readily accommodated with the installation used for handling riprap barges.

The crew of 18 men employed in the quarry, plant, and dock operations is headed by J. S. "Stu" Mitchell, superintendent. Co-owners of this new member of the industry, are L. E. Connor and W. R. Stavely.

From the present screening, oversize is returned to the primary; the intermediate fraction flows to the stockpiling and loading belt, foreground; and the throughs go to the belt loading the truck, right. Another stockpiling belt will be added to accommodate expansion of the screening operation.

The Lime-Silicate Plant

Part IV–Utilization of the Glassy Silicates

By WOLF G. BAUER
Consulting Engineer

PREVIOUS articles in this series pointed up the many product possibilities for an operation processing one lime and one silicate raw material. While there would be economic advantages in manufacturing as few as two types of products (one each from the lime and from the silicate deposit), the potential product variety is generally a good deal greater. It will depend mainly on the chemical and mineralogical make-up of both types of materials, and to some extent also on their physical characteristics.

As was shown previously, the number of products is not only the sum of those made from either lime or silicate, but they may also include a number resulting from chemical interaction as well as from physical mixtures of these two. The nature of silicate, more so than that of lime, will usually provide the greater influence on final product possibilities. Silicates in the form of the common clay minerals have already been treated in several other earlier articles in connection with aggregate, pozzolan, and hydraulic cement manufacture. Let us now review several of the glasses from the standpoint of their utilization by the lime-silicate plant, and also the processing requirements involved in their use.

Although glass is generally considered to be an undercooled liquid, some glasses are nevertheless suspected of incorporating some loose and irregular alignments of molecules along crystal composition patterns. The nature of the ions present, their radii, and whether they can accommodate lime ions within their structure will determine their usefulness in the whole range of lime-silica products and technology.

VOLCANIC GLASSES

Due to a more or less rapid chilling process, volcanic eruptive materials are glassy and amorphous in nature. However, they may contain varying proportions of crystalline constituents. They may also show, of course, varying degrees of alterations into hydrous crystal compounds such as zeolites or clay minerals, for instance. Such glass is generally quite hard and abrasive, lacking cohesion and plasticity when wetted (in powder form) with water.

Volcanic glasses are usually of intermediate hydraulic reactivity with lime and usually of low reactivity to alkalies, although their affinity for lime may, in some cases, be enhanced by heat and chemical treatment. Their silica content may range from 40 percent to 75 percent. They are found as hard, rock-like deposits or soft unconsolidated fragments.

Scoria Volcanic surface flows and eruptive debris of vesicular or porous structure which is physically quite similar to cinders or bloated shales are classified as scoria. These represent a rather valuable silicate for the lime-silicate plant. The crushing strength of scoria varies with its density and porosity; and it may yield excellent intermediate-weight to lightweight aggregates through simple crushing-and-screening operations. It often exhibits good native pozzolanic properties, requiring only drying, grinding, and classifying to be converted into a pozzolan. By grinding and blending with hydrated lime and a suitable additive, masonry and pozzolan cements can also be manufactured for many additional uses. In the case of smaller plants, where the scoria is dried but not heat-activated, and where lime production is less than silicate tonnage, lime burning is best done in shaft kilns or fluid-bed calciners, rather than in a more costly rotary kiln system and operation.

If the scoria is not pozzolanic, even with heat treatment, lime-silicate cement may be considered. This is not as readily produced, however, as would be the case with the more plastic materials such as clays and shales, which allow pelleting with water, or extrusion blending and forming for kiln feed conditioning. Certain binders may be used to increase adhesion for forming in either pelleting drums or briquetting rolls.

With the availability of dolomitic lime, these relatively high-iron volcanics can be melted for mineral wool manufacture as a further product possibility.

Pumice Pumice differs from scoria in being a lighter-colored frothy volcanic glass, without the somewhat denser sponge-like structure normal in scoria. Generally, pumices are also lower in iron, higher in silica, more porous, and structurally weaker than scoria. They may contain some chemically combined water. They are usually lumpy and consolidated, varying from large chunks to sand size.

The lime-silicate plant using a suitable pumice as its silicate component, first of all, can produce lightweight aggregates. The denser the material, the stronger it is structurally. However, there are regional differences in the glass structure. Examined under the microscope, some pumices have a flaky composition, making them weaker and more absorptive than those of bleb and true vesicular makeup. Moisture absorption through hairline cracks between flakes and pores is a critical and undesirable characteristic influencing volumetric changes during wetting and drying.

In the lime-silicate plant, with its heat-processing facilties, this origi-

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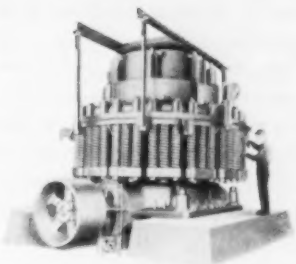

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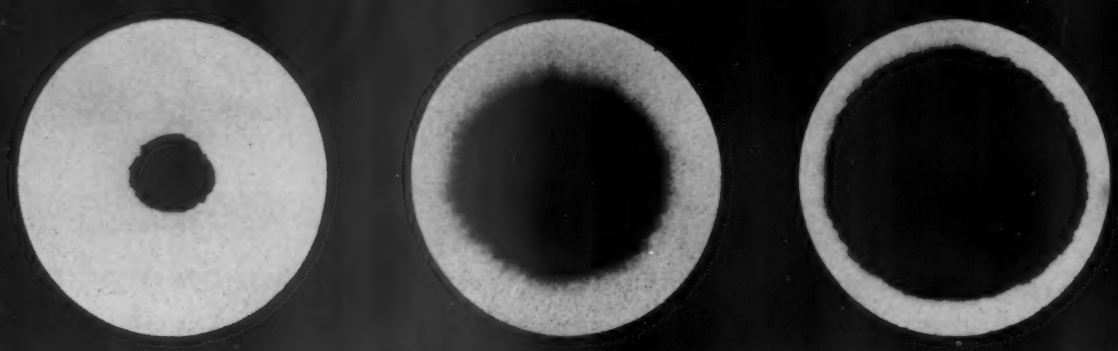

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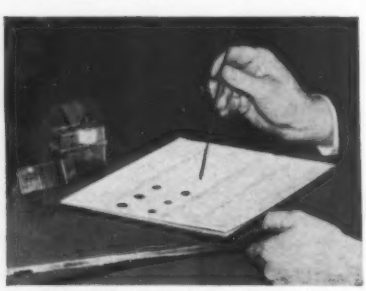

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nal property of some pumices may be corrected to a substantial degree by employing a heat-mending technique in the pyro-plastic state, with subsequent slow annealing-cooling. This treatment results, at some increased cost, in a somewhat greater particle density, increased strength, reduced permeability, and lower drying shrinkage.

Many pumices are lime-reactive, a property which often increases with deeper penetration into the deposit. Thus, partial decomposition may enhance pozzolanic quality. Heat activation will improve many pumices in this respect. Rotary and fluid-bed kilns would be more suitable than shaft kilns for calcining pumice because of the soft and abradable nature of the lumps. Such heat-processing equipment can serve for drying and/or calcining prior to grinding and classifying.

As in the case of scoria, lime hydrate and additives may be blended with pumice pozzolan to produce various pozzolan cements for mortar, steam-cured masonry, road soil cements, drilling cements, etc. If pyro-processing is used for either pumice aggregate annealing or pozzolan activating, lime can also be burned in shared kilns for the manufacture of hydraulic lime, silicate cement, or various lime products.

Tuffs, Trass, Pumicite, Ash These more or less unconsolidated altered volcanic glasses occur as relatively soft compacted deposits made up mainly of finely divided individual glass fragments below sand grain size. As such, the lime-silicate plant cannot produce a strong aggregate therefrom unless such material is rebonded at incipient fusion in specially adapted and operated kilns. Such a process would be justified only in regions where a hard or strong aggregate for general construction is not otherwise available.

Drying, pulverizing, and classifying will produce, instead, powder aggregates for various mineral filler uses. However, as in the case of pumice, some of these fine glasses are lime-reactive or can be made so by a suitable calcining process. The small particle size and dusty nature of the material pose several problems in pyroprocessing. Flash-drying and fluidization techniques may be employed. If rotary equipment is used, design must be for low gas velocities and minimum dust entrainment. Briquetting and pelleting with binders is beneficial. Such binding agents must not only hold the pellets together during drying, but especially at the calcining temperatures short of the agglomeration point, which is usually the weakest stage in the thermal history of the pellets through the kiln. Certain chlorides, sulphates, weak acids, and plasticizers are sometimes helpful in reducing pellet abrasion and attrition and also spalling.

Many of these volcanic ashes are already of high surface area in view of their small particle size. Although this is desirable for the production of cementing materials, the fineness modulus may not be of the most suitable value. This native particle-size gradation, or variations therein, will determine the type and extent of subsequent grinding and classifying to be done on the material.

Platy or flaky micro-structure and particle shape tends to promote higher shrinkage values, and thus the fineness to which one can reduce these tuffs and ashes for maximum strength and hydraulicity is often governed or limited by this problem. Generally, however, it can be said that these materials demand less grinding power. This is especially true when preclassification or "air-scalping" is practiced ahead of grinding.

INDUSTRIAL-WASTE GLASSES

Slags A lime-silicate plant can conceivably be set up within economic transport distance from blast furnaces or other active metallurgical waste slag supplies, and all the products mentioned in connection with volcanic glass utilization would also apply with this silicate source. It may be pointed out here that the large supply of limestone used in blast-furnace operations could also be a potential supply of lime for the lime-silicate plant.

Metallurgical slags are primarily chilled glass including various amounts of crystallization products. Their chemical composition varies

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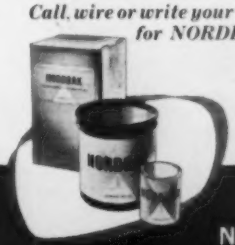

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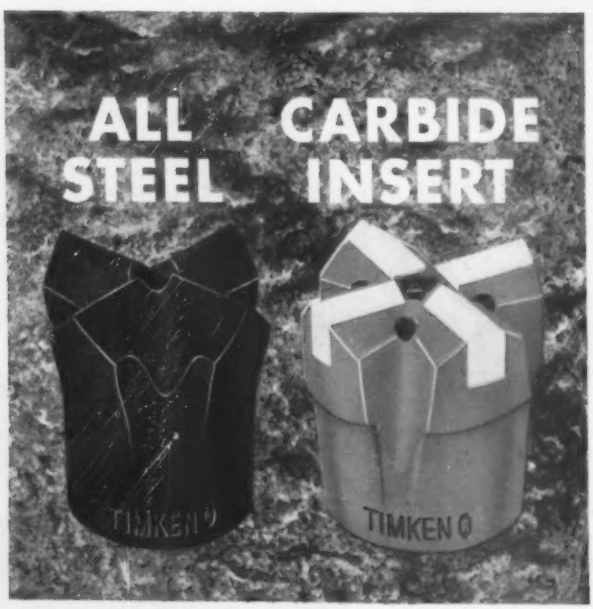
Carving out a railroad roadbed through tough malpais called for consistently high quality rock bits. Morrison-Knudsen selected Timken® removable carbide insert bits for the job and drilled over 3,000,000 ft. of hole in this volcanic formation — some of the toughest rock in the West. The carbide insert bit's 5-front hole design, pioneered by the Timken Company, assured excellent hole cleaning. And the special analysis carbide inserts took all the punishment of drilling in this basalt lava formation.



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not only with the metallurgical process and ore used, but to a lesser extent also regionally within the same industry or process. Blast-furnace slag for pig iron production generally contains from one-third to one-half the amount of silica found in the volcanic glasses (30 percent to 40 percent instead of 40 percent to 75 percent). Alumina is about equal to that occurring in volcanic tuffs and scoria (10 percent to 15 percent), while magnesia is generally higher. The chief chemical difference, however, is its lime content, which equals or exceeds its silica content. Slags from other-than-iron blast furnace operations are higher in iron, but may be either lower or richer in silica and lime.

Since the method and rate of cooling and solidifying the molten slag will determine its properties and uses, lime-silicate plant operators may either purchase this silicate component in various forms as processed and sold, or arrange to install the facilities for proper quenching at the furnace taps.

Slag which is allowed to cool slowly in air as it collects in pits or banks for solidification forms a tough and inert, partly crystalline rock-like mass which can be crushed into heavy aggregates for many purposes. If the molten slag is chilled more rapidly with a limited amount of water, the resulting steam vesiculates and expands the glass. This action is also aided with some techniques through simultaneous mechanical dispersion or water-jetting during quenching. This process yields a porous and cellular material which can be graded into lightweight aggregates. It is somewhat similar to scoria or volcanic cinder aggregate, although lighter in color.

Boiler slag from "wet-bottom" type coal-fired furnaces can also be water chilled and then transported to the lime-silicate plant for subsequent crushing and screening into lightweight aggregates, pozzolans, or cements.

Very rapid slag quenching in excess water produces granulated slag which often exhibits hydraulic and lime-reactive properties. In this reactive form it becomes a valuable silicate constituent in the manufacture of hydraulic cementing products. The lime-silicate plant can produce therefrom hydraulic hydrated lime, pozzolans, pozzolan cements, and possibly silicate cements.*

Many slags are quite reactive to alkalies and sulphates, and their hydraulicity can be enhanced and controlled by the use of such materials as dehydrated gypsum, or carbonates and hydroxides of sodium and potassium. This is of value in manufacturing specialty cements for chemically resistant concretes. Sursulphate cement made from slag, lime, calcined gypsum, and any other activators, for example, can be produced to equal portland cement in strength while imparting certain buffer qualities to the concretes and mortars in which it is used.

Fly Ash This synthetic waste glass is a by-product of the pulverized coal burned at large power plants. In the form of a powder-like aggregate, it is made up of tiny glass beads, molten ash droplets, and also some residual glass-entrapped carbon and free coke particles. This carbon may constitute from 1 percent to 10 percent by weight of the ash. Fly ash is generally collected by electrostatic precipitation, and thus it is of rather high specific surface. Often 80 percent or more of the ash will pass a 325-mesh sieve with a Blaine surface of 3,000 sq. cm./gr.

Chemically, fly ash is similar to coal cinders and slags, with usual compositions of about 45 percent silica, 20 percent alumina, 15 percent iron, and minor amounts of lime, magnesia, alkalies, sulphur, and combustibles. The chemical and physical properties and characteristics will depend on the type and source of the original coal, as well as on the furnace loading and combustion conditions prevailing during any one operating period.

As the silicate source for coarse aggregate production, fly ash must first be fusion-agglomerated and then recrushed and sized. This is possible in view of its coke and carbon content. After drum or table pelleting with water, fly ash can be sintered with as little as 5 percent carbon on a sintering grate or in

*See *The Lime-Silicate Plant*—Part II, PIT AND QUARRY, December, 1960, page 151.)

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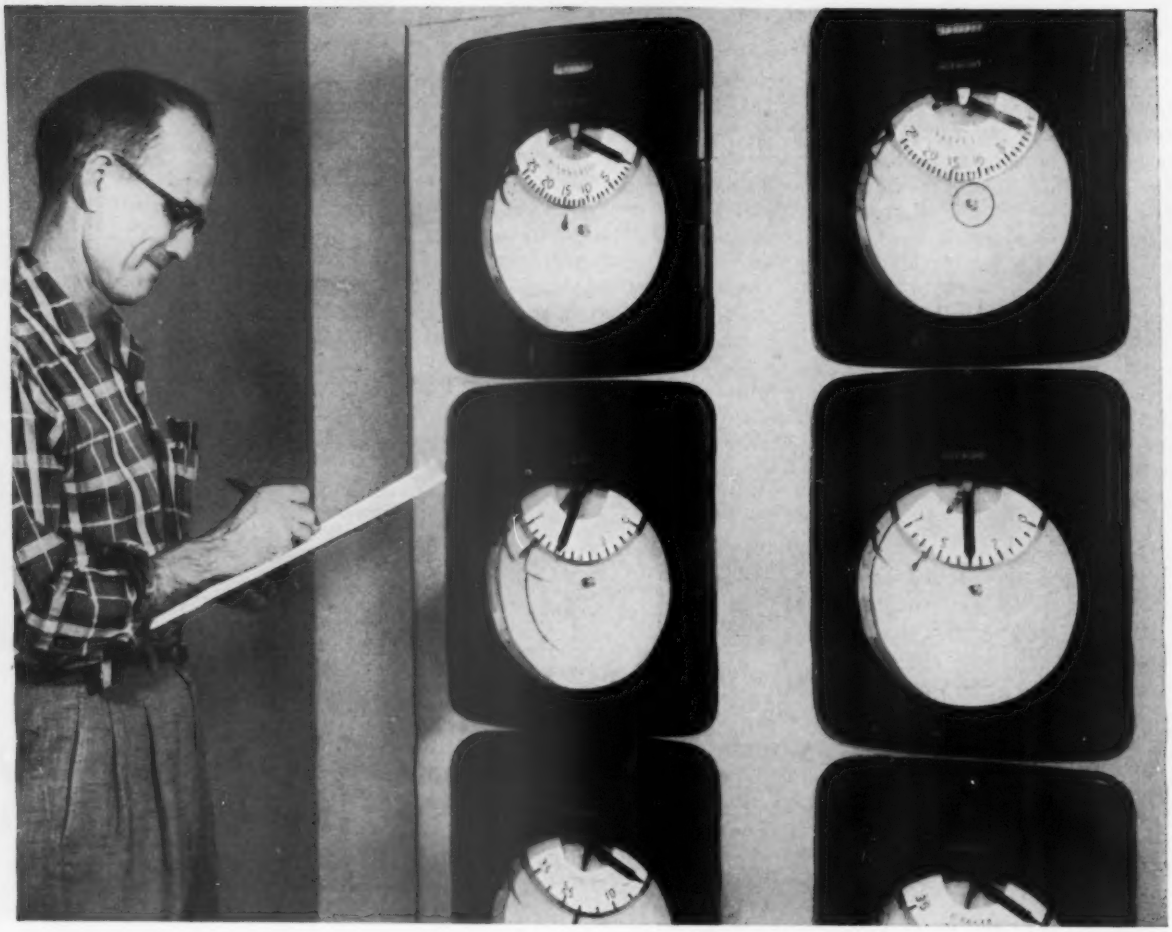

with this Foxboro Mass Flow System Arkansas Cement measures clay slip directly in pounds-per-hour

Unusual control methods are standard procedure at Arkansas Cement Corporation's Foreman Plant.

Take their two Foxboro Mass Flow Metering Systems for example. These unique systems use Foxboro Magnetic Flow Meters — the meter with no flow restrictions — to measure clay slip flows in gpm (recorded on top instruments), while gamma ray density cells measure solution density (middle two recorders).

The product of these two values is then recorded directly in pounds-per-hour on the two bottom Dynalog* Electronic Recorders. The control panel is located in the plant's laboratory so the technician can adjust slurry flows exactly as required.

The only maintenance ever required on the complete system has been the occasional replacement of a vacuum tube.

Mass flow — pressure — temperature — motor load — no matter what your process variable, there's a Foxboro System to measure and control it. And an industry-trained Foxboro Field Engineer nearby to help with the details. Call him — or write Foxboro direct about your problem. The Foxboro Company, 223 Norfolk St., Foxboro, Mass.

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TWO FOXBORO 4-inch Magnetic Flow Meters measure flow of overburden slip. Since Magnetic Meters have no flow restrictions of any type, they measure slurries as simply as water. Measurement is made magnetically from electrodes flush-mounted in meter wall.

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shaft kilns or cupolas. If a flux and gas-generating agent such as limestone is used, along with a refractory clay for coating to prevent heat-agglomeration, fly ash can also be pelleted and burned in rotary kilns for lightweight aggregate production, at somewhat higher fuel costs than for sintering. Here again, shared rotary or shaft kiln equipment in the lime-silicate plant makes the process feasible. In the case of a London installation, for example, their 10-ft. diameter by 40-ft. high shaft kiln, producing at the rate of 40,000 tons of lightweight fly ash aggregate might also have been designed and adapted to burn lime at about one-half this rate in a combination plant.

As a silicate component for cementing materials, fly ash can first of all be handled and processed as a pozzolan for concrete work and low- or high-pressure steam-cured masonry products. As such, its pozzolanic activity will depend on the carbon content, particle shape, and surface area, and to some extent also on the chemical composition. The rounded and often spherical shape of some of these ash particles bring about a higher degree of workability and plasticity than other types of powdered silicates would exhibit with the same specific surface. This particle shape tendency has resulted in low shrinkages of concretes in which fly ashes were used as replacement fractions for cement, or were added as fines. Fly ash can also be manufactured into hydraulic cementing materials similar to those discussed in conjunction with the other silicate glasses of fine size.

Fly Ash Beneficiation Beneficiation of fly ash should primarily be directed toward improving its hydraulic quality as a pozzolan and a hydraulic cement with lime, and toward leveling out the ever-present variations in particle size and surface as well as carbon content. Four avenues of approach toward this goal are open to the manufacturer. They may comprise any one or all of the following methods: (1) partial carbon removal along with low-quality coarse ash fraction; (2) total carbon removal by calcination under color-control conditions; (3) grinding pre-classified coarse fraction for optimum active surface development, while retaining the maximum amount of spherical-shape particles; and (4) chemical activation.

Removal of carbon and coke has a number of advantages in that it lightens the color of the ash and the products in which it is used; it tends to level out any strength and hydraulic action variables from this source that cannot be pre-estimated and thus compensated for by additives or other means; and it also increases the reactivity and cement replacement ratio by virtue of increasing active mass.

The lime-silicate plant could employ its shaft or rotary kiln facilities for total carbon removal. With such equipment, the process requires pelleting or briquetting moist ash for kiln feed preparation, and subsequent oxygen control in the decarbonizing atmosphere within the kilns. This is done with special kiln seals, system gas-pressure control, and recycling of low-oxygen exhaust gas. The writer has removed carbon from fly ash by fluidization techniques in which rather close temperature control can be practiced. In this connection of the investigation, it was also noted that low-temperature calcination had a beneficial effect on lime reactivity.

Carbon can be partially removed by a modified fractionation process which does not involve calcination. A two-stage technique can be used whereby the coarsest ash is first air-separated out, and this fraction is then screened for the removal of the large coke and carbon particles, along with a small percentage of coarse glass of low reactive surface. In one instance, removing a coarse fraction comprising 5 percent of the total fly ash, this two-stage technique simultaneously eliminated 50 percent of the total carbon and coke.

Increasing the specific and reactive surface of fly ash is another method of upgrading this material. This is practiced in some French installations. This writer looks upon normally collected fly ash as a two-component system made up of a minus 50-micron reactive fraction (plus inactive carbon), and a coarser, less reactive fraction of glass and coke in the fine-sieve range.

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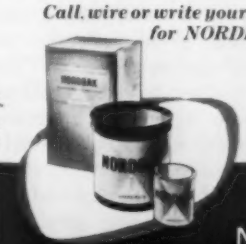

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With this concept as a basis, upgrading fly ash for greater hydraulic reactivity to lime and over-all uniformity revolves around the size reduction of the coarser particles, so that this artificially increased surface becomes additive to the more adequate surface-per-mass of the fines fraction. Such a fractionating-grinding-reblending technique also retains the quality and unique character of this fines fraction with its spheroidal glass particles.

Low-carbon fly ash may be prefractionated with a narrow cut-point air sifter, the coarse fraction then being ground to such surface as to maintain the final over-all surface factor of the reblended product. This process design is most economic of power and with controlled recycle-grinding, it can furnish a guaranteed uniformity, particle size gradation, or fineness modulus. Hydraulic strengths up to double those of the non-treated ash have been obtained by the writer with this technique.

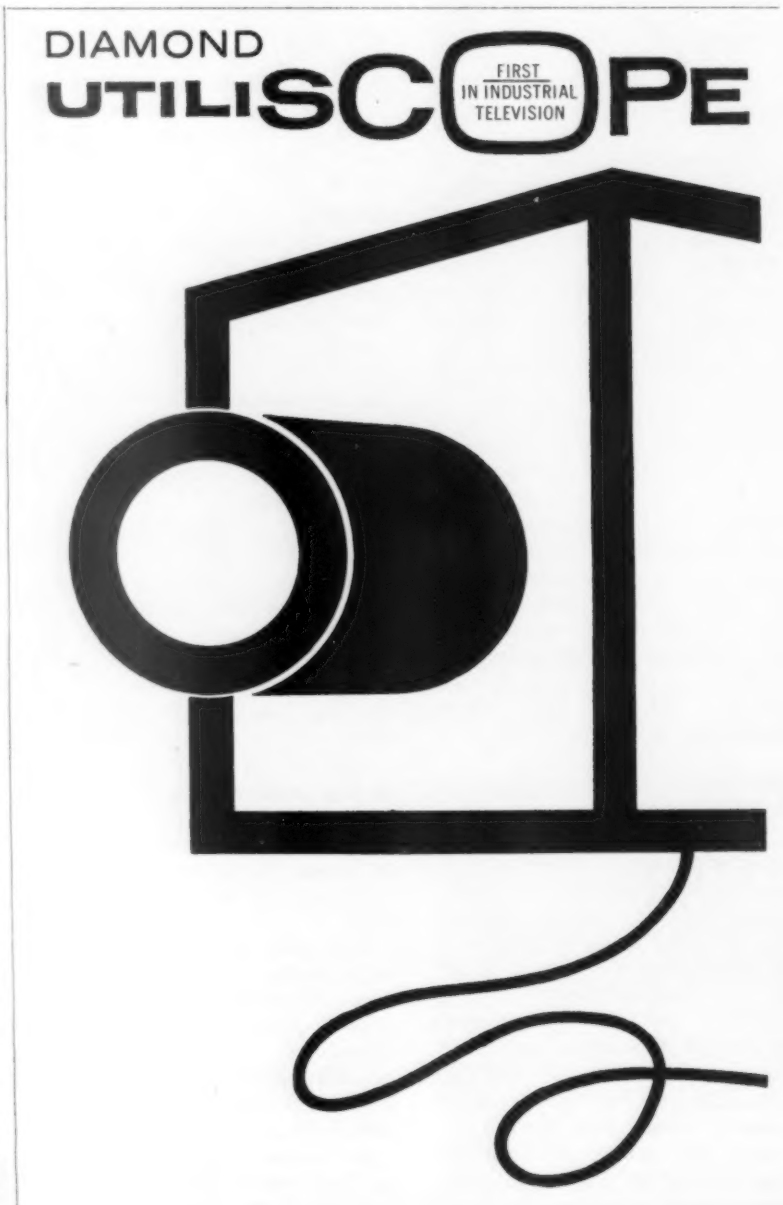
Supplemental to these upgrading methods is the addition of soluble reaction salts which accelerate the hydraulic activity of many fly ashes. Using any three of these above mentioned upgrading techniques together can produce some very excellent results. It should also be kept in mind that once such a process is designed into the lime-silicate plant to enhance the quality of this silicate component for the manufacture of various hydraulic cementing products, it is only a small step to upgrade the fly ash for dual-purpose use as lightweight aggregate, as well as pozzolan and cement. In such a case, a simple separation will provide a fine fraction of higher hydraulic quality and a coarse fraction of glass with maximum combustible for self-sintering into aggregate.

When fly ash is available in the form of old accumulated waste dumps to be reclaimed, drying is the first processing step. The problem to be kept in mind here is one which pertains to the collection of the smallest micron fractions. Obviously, this must be accomplished with collectors as efficient as those originally used in the powdered-coal furnace system. While this would normally require electrostatic precipitation or filtering, gas volumes per ton of ash are of a much lower ratio and order than those which obtained in the original furnace producing the ash. Rotary dryers with low gas velocities and minimum material agitation may be used. If the moist ash is to be sintered, drying is done within the kiln.

Fluid-bed dryers represent another type of equipment. For low dust collection, rabbled tray dryers or indirect rotary dryers can be employed. The lime-silicate type of operation may also have available waste heat from lime burning and other pyro-processing. Certainly it is good engineering to utilize the residual heat in any recovered or separated carbon waste fraction for the drying of moist fly ash from dumps.

SUMMARY

For the manufacture of aggregates, insulation, and cementing materials, the lime-silicate plant operator can draw upon a number of natural and artificial glasses for the silicate component. Aggregates are readily produced from air-cooled slags, expanded metallurgical slags, furnace clinker cinders, pumice, and



volcanic scoria. In some instances aggregates can also be produced from the softer and finer glassy materials such as volcanic ash and furnace fly ashes, with special heat-agglomerating techniques.

For the production of cementing materials, metallurgical slags must be chilled rapidly, to inhibit crystallization. (This is not true of slag used for a silicate and lime component in portland type cement manufacture.) For such products, many of the glassy silicates can be upgraded or made more reactive by heat treatment by preclassification for removal of certain low-quality fractions, or by chemical activation with soluble salts. Inasmuch as most of these silicates are abrasive and harder to grind than lime components, air-scalping and reblending techniques, rather than full intergrinding, is indicated for process efficiency and fineness modulus control.

The glasses are often among the more economical silicates to process. Less heat is usually needed for drying, and many require no heat activation. In some cases of location and cost factors, chemical activation may be cheaper than thermal treatment. Most of these glasses are quite dependable in chemical composition. What is often even more important, lack of the mineral and crystal phases eliminate additional variables from this source. Considering that we have here discussed only one of many groups of silicate sources available to a multi-product operation of the type advocated, it would appear that process, product, and plant designs will be of manifold proportions and range.

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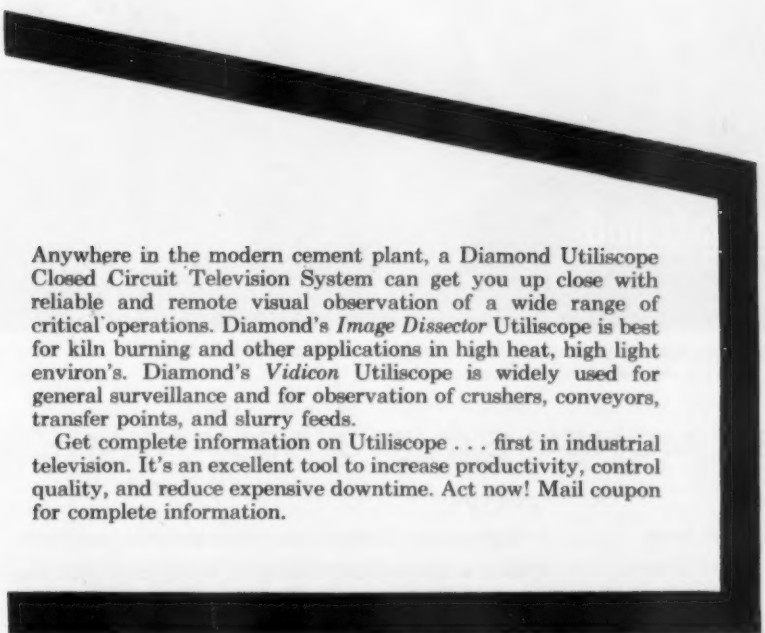

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Nielsen Elected President At 13th Meeting of M.L.P.A.

The 13th annual convention of the Minnesota Limestone Producers Association was held recently in Minneapolis. Robert M. Koch, president of the National Institute Incorporated, was guest speaker at the afternoon session and at the annual banquet. Vern Falk, chairman of N.L.I., was also in attendance.

Don Stussy, N.L.I. regional vice-president, is the past-president of M.L.P.A. He has been succeeded by Clarence Nielsen, son of N.L.I. director Einar Nielsen.

Minnesota has the highest percentage of limestone producers of any state as members of N.L.I.

H.R.B. Releases New Bulletin Describing Soil Stabilization

The Highway Research Board has just released Bulletin 262, *Preconditioning and Stabilizing Soils by Lime Admixtures.* The 85-page bulletin presents the research results of five studies on lime stabilization of soils which were given at the 39th annual meeting of H.R.B.

The five studies are as follows: *Lime Stabilization Using Preconditioned Soils, Lime Fixation in Clayey Soils, Improvement of Lime Stabilization of Montmorillonitic Clay Soils with Chemical Additives, Reaction of Hydrated Lime with Pure Clay Minerals in Soil Stabilization,* and *Recent Soil-Lime Research at the Massachusetts Institute of Technology.*

The bulletin is available at $1.80 per copy from H.R.B., 2101 Constitution Avenue, N. W., Washington, D. C.

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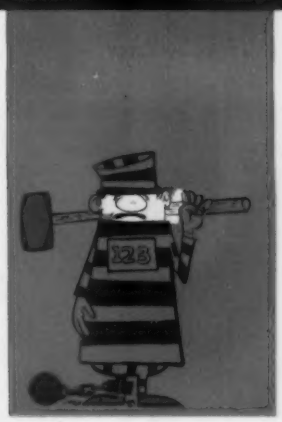
By HAROLD J. ASHE



TAX CHISELING

It's costly . . . and foolish!

THE OVERwhelming majority of business owners and salaried executives pay the full amount of income tax properly assessable against their business earnings, salaries, and other taxable income. Some taxpayers, due to oversights, overpay. At the other extreme are those who underpay, although it is known that anyone's income tax returns may fall under the scrutiny of the Internal Revenue Service.

Underpayment of taxes may come about from any one or more of several circumstances. These include misinterpretation of the rules and regulations in favor of the taxpayer; too liberal interpretation, contrary to the facts; and, finally, the deliberate filing of fraudulent returns. The first two far exceed the third as a cause for income tax underpayment. However, deliberate tax chiseling is not uncommon—it must be reported—by business taxpayers and executives.

Taxpayers who dutifully pay their federal income tax may have some curiosity as to what happens to those taxpayers who try to cheat on taxes. This is a legitimate interest because those who don't pay their share of the nation's tax bill increase the load on those who do pay.

Small-Time Taxpayer Not "Safe" Not long ago one taxpayer pleaded no contest on two counts of income tax evasion, involving around $2,000. A federal judge handed down a fine of $5,000 and an eight-month sentence to be served in a federal prison. This did not wipe out the original tax claim. Many cases involve even smaller amounts in unremitted taxes, based on unreported income. This should dispose of the notion, too widely held, that the government presses action only against such tax evaders as are in the top brackets of income.

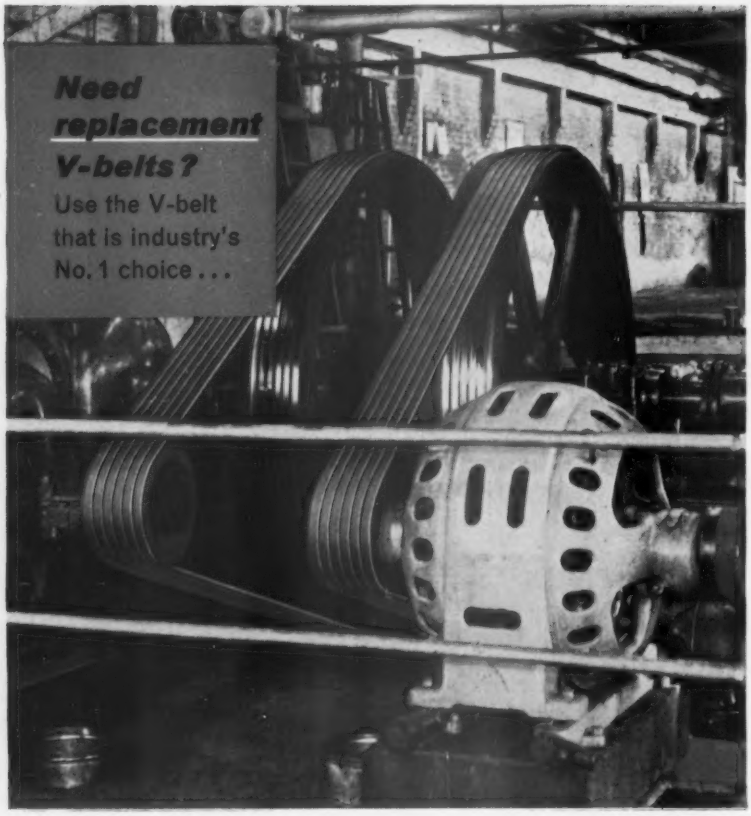
Investigators of I.R.S. Are Thorough Prosecution for tax fraud is being stepped up. The future does not look bright for tax chiselers. The government has increased the number of agents assigned to running down frauds. The percentage of income tax returns that is being carefully audited is being increased, year by year.

In addition, spot checks of certain businesses, trades, and professions have proved lucrative for the government by exposure of fraudulent returns. This fact has had the salutary effect of prompting others in the same trade or profession to rush forward with voluntarily amended returns and payment of increased taxes.

Numerous and seemingly ingenious methods are resorted to by taxpayers to evade most (or all) of their income tax. Yet, once the taxpayer appears in court, he discovers to his chagrin how ridiculously easy it was to track him down. The beginning of his downfall may come about through a routine check by a field agent, a government accountant's feeling that the return "doesn't look right," a tip from an informant, or a combination of these factors. There is no such thing today as an original method for perpetrating an income tax fraud; they're all known to the Internal Revenue Service. They seem "original" only to the amateurs who try them.

Two Sets of Accounting Records One of the favorite devices of tax evaders is keeping a double set of books, one for themselves, the other for possible audit by I. R. S. This "foolproof" device is a refuge only for fools. It is usually easily exposed, and it is also one of the most difficult to maintain with consistency. One taxpayer, maintaining a second set of books, made the fatal mistake of reporting only about three-fourths of his gross receipts while deducting all of his business expenses. His expenses were inflated out of all proportion to his receipts, as was revealed by the amount of the receipts reported. In effect, *he informed on himself.*

However, even if this taxpayer had been "smart" and consistent,

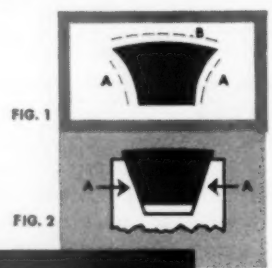


Gates Hi-Power V-Belts give you longer service life on your drives

Concave sidewalls (U.S. Pat. No. 1813698)—It is easy to see why Gates Hi-Power V-Belts give far longer belt life than ordinary V-belts. *Just make this simple test:* Bend a Gates V-Belt as if it were going around a sheave. Feel how the concave sides (Fig. 1-A) *fill out* . . . become perfectly straight (Fig. 2-A) to make *full contact* with the sides of a sheave. The belt thus grips the sheave evenly, and distributes wear uniformly across the sides of the belt, lengthening belt life.

Precisely-engineered arched top—The arched top (Fig. 1-B) of the Gates Hi-Power V-Belt prevents any distortion of the tensile section cords as the belt bends around the sheave . . . the load is uniformly distributed with each cord carrying its full share.

You will get fast delivery of Hi-Power V-Belts from the local stock of your nearby Gates Distributor. Call him today.



The Gates Rubber Company
Denver, Colorado

BP-6

Gates Hi-Power V-Belts

Enter 134 on card, page 207

adjusting his expenses downward, his fraud could still have been proved with only a little effort. His expenses were a matter of record with his various suppliers and creditors.

Consider the case of the surgeon who, according to his records, charged cut-rate fees for major operations. A check with some of his patients brought out the fact that they were not the beneficiaries of such charitable actions. In fact, one disgruntled patient recouped the cost of his operation by informing on his physician for a cut of the income tax recovered.

Cash Held Back Another favorite device of business proprietors receiving cash payments is to fail to report all of the cash received, as distinguished from receipts by checks. The temptation may be great to hold out some cash, and never to reflect it in accounting records. Here, too, a taxpayer is in grave danger: his known expenses, his reported gross receipts, and his manner of living won't jibe. He lives in constant danger of being trapped by an agent disguised as a cash customer, or by the fact that an agent notes the character and size of his business, which belies the income tax return representations.

Net Worth Method At this point it may be helpful to point out that the government can employ what is known as the "net worth method" for calculating an income tax deficiency, if other methods cannot determine the facts of a taxpayer's taxable income, and provided that there is reason to suspect fraud. This method has been used for years. When its use was challenged by a taxpayer, the United States Supreme Court sustained the government.

The net worth method of calculating a taxpayer's income tax establishes his net worth at any given time. If necessary, the government may go back to a taxpayer's first income, bringing all pertinent facts down to the period in question. The government proceeds to establish the taxpayer's increasing net worth over the years. This is a starting

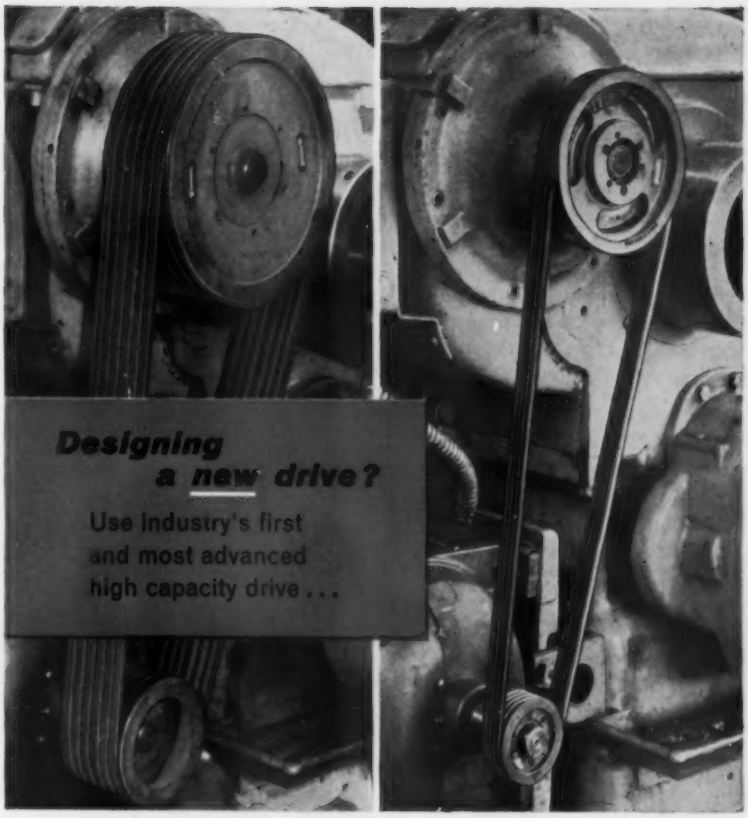
point in determining his taxable income for the years under investigation. This method not only takes into account the net worth, as it accumulates year by year, but also calculates the personal living expenses which the taxpayer has incurred during the same periods in question.

For example, a taxpayer's net worth may be established as $75,000 at the beginning of the tax year. At the end of the year it may be determined that his net worth is $90,000. In addition, his estimated living expenses for the year were $18,000. His adjusted gross income for the tax year for tax purposes is calculated to be $33,000 ($15,000 increase in net worth, plus $18,000 living expenses). On this amount his income tax will be figured—plus penalties.

In building a case, based on the net worth method, the government is prepared to go to great lengths to establish the outside limits of a taxpayer's income. It will search out and scrutinize every personal expenditure, and exert considerable effort to establish a taxpayer's personal habits and manner of living. Necessarily, some items must be estimated, and these estimates may be on the high side. In fact, the perpetrator of a tax fraud runs the very real risk of ending up with a larger tax than would have been the case had he leveled with the government.

Efforts will be put forth to determine the amount of the taxpayer's clothing purchases, value of jewelry, and home occupancy costs, including lavish entertaining. Gambling activities will be investigated, and expensive hobbies and recreation will be scrutinized, as well as anything else which may shed light on the taxpayer's real income—as distinguished from his declared income.

Scores of tradesmen and others having pertinent information may be interviewed. All of these data will go toward establishing the real income of the taxpayer under investigation. He may be put under surveillance, if his free-spending activities, such as track betting or night clubbing, cannot otherwise be determined. He may first come to



Gates Super High Capacity V-Belts save drive space, weight, money

If you are designing a new drive, or if the belts and sheaves of a conventional V-belt drive must be replaced, you will benefit many ways by installing a Gates Super HC High Capacity V-Belt Drive.

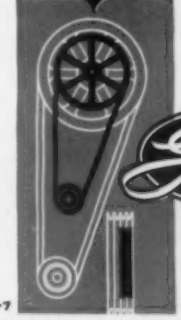
Gates Super HC V-Belt unites new, high performance materials with a basic change in the shape of the belt itself. Because of this, it is able to handle up to 3 times the horsepower of a conventional V-belt in the same space. As a result, Gates Super HC Drives can often cut in half the space required for your drive. Drive costs are cut as much as 20%, and drive weight reduced 20% and more. Guards can be smaller. Bearing loads are less, increasing bearing life. And the drive can operate at belt speeds up to 6000 ft/min without dynamic balancing!

There is a Gates Field Engineer serving your area. To contact him for help in designing a new drive, call your nearby Gates Distributor.

The Gates Rubber Company
Denver, Colorado

BP-7

Gates Super HC Drive saves space, weight and money



Exclusive design features include: precisely engineered arched top, concave sidewalls, Flex-Weave cover, super strength tensile construction.

Gates

Building the future on 50 years of progress

Gates Super HC V-Belt Drives

Enter 135 on card, page 207

the attention of I.R.S. in such a free-spending environment.

Unrelated Law Violations One taxpayer withheld cash receipts from his declared earnings and cagily did not deposit this cash in his bank account. He accumulated these earnings for years in a wall safe. A female companion learned of this practice and pilfered the safe. The taxpayer's indiscretion was in reporting the burglary to the police. The woman was convicted on a burglary charge and he for tax evasion. His prison sentence exceeded hers.

In yet another case, a taxpayer's fraud was uncovered in the course of investigating a series of jewelry robberies. Although he was a respected businessman, evidence nevertheless pointed to the taxpayer as the fence for two suspects that were being held. A court order resulted in his safety deposit boxes being opened in a search for the loot. More than $100,000 was found in bills—but no jewels. At this point, the Internal Revenue Service moved in, after a quick check of his past income tax returns. His reported business earnings and other income aggregated over the years was only a fraction of this cache.

Informants In another case, a divorcee tattled on her former husband. She was able to give helpful details as to how he had perpetrated his tax fraud. In due course, she was suitably rewarded for her assistance. A year later, through mutual friends, the husband learned that his ex-wife had paid no income tax; so he informed on her. Sure enough, she had been emulating her ex-husband, even employing the same tax-evading devices he had used!

Self-Incrimination Not infrequently, tax evaders reveal their tax frauds by acts seemingly far removed from cheating the government. In one instance, a businessman boastfully admitted to a reporter that he had launched his business only a few years earlier without any funds except a line of credit. He was now he said, worth a million dollars, and the implication was that any red-blooded American boy could do the same.

The Internal Revenue Service later confirmed his claim. However, the evidence brought out in court was that his rapidly amassed fortune had been attained less by exceptional business acumen than by income tax evasion on a grand scale.

Expensive Vacations Crime stories, divorce actions and settlements, marriages and social activities may be fruitful for investigators charged with smelling out tax frauds. Consider the case of a socially ambitious wife of a certain business executive. At her insistence, they took an expensive vacation every year, one year to the Orient to visit a son, another year to Europe. These junkets were faithfully reported in the society columns, presumably evoking envy of readers. There was just one serious defect in this seemingly happy situation. The husband's reported taxable earnings were not consistent

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with the yearly outlays for such trips. Investigation turned up other evidences of luxury living which would not have been possible on his reported earnings.

Other Clues To Cheating Business expenses of questionable business value, if any, may come under scrutiny. One imaginative, if misguided, taxpayer in the upper brackets charged off as business entertainment the trousseau and wedding expenses of his aging daughter. Many of his customers and business associates were wedding guests, and the taxpayer presumably reasoned that this social display of his affluence constituted business entertainment. While the court dryly admitted that the taxpayer had lost an exemption, it refused to concede that he had gained a business entertainment deduction.

Entertainment For "Business" May Be Suspect Entertainment expenses, generally, are coming in for renewed attention by Congress and the new administration. It is now common knowledge that entertainment for alleged business purposes is being widely abused by many business taxpayers. The vast majority of taxpayers don't have entertainment as a tax deduction loophole and are becoming more and more resentful of those who are abusing it. The simple fact is that too many business taxpayers are charging strictly personal entertainment to business. It is reaching almost scandalous proportions in some industries and trades. Vacations, hunting trips, and attendance at sports events are being charged off as business expenses when no business purpose is being served and, often, no customers are entertained. There is now serious talk of denying all business entertainment as a tax deduction. Meanwhile, the Internal Revenue Service is more carefully examining such deductions, insisting that a business purpose be demonstrated.

Overgenerous Contributions I.R.S. has a low reaction point to excessive charitable deductions. While this is a charitable nation, collectively and individually, few taxpayers can afford to give as much to worthy causes as some claim in their deductions. The Service views with suspicion contributions that are too large in relation to income, and rightly so. Such deductions had better be supported by canceled checks or receipts

Padded Exemptions Dependency exemptions are often overstated, although all other facts may be correctly reported. For some obscure reason not easily fathomed, some taxpayers think that this is a safe gimmick although they may reject other fraudulent devices. Yet, the fact of dependency is the most easily determined upon investigation. That "Ginger," upon identification, is found to be a cocker spaniel will evoke no amusement on the part of the government, not even if the explanation is made that she "eats as much as a woman."

The overwhelming majority of

KOLMAN Radial Stackers Minimize Material Segregation

100'x24" Stacker is one of four Kolman Stackers used in the production of aggregate at Squaw Valley, California, in preparation of roads and site for the 1960 Winter Olympic Games. Stackers in the background are 70'x24".

PNEUMATIC-TIRED STACKERS IN LENGTHS UP TO 150 FEET

Reports of outstanding performance by the Kolman Model 101-R Radial Stacker are rolling in from all parts of the country. Owners are enthusiastic about bonus features offered by the Kolman Stacker — features like cable suspension of the boom, two-position wheels, balanced electric drive on the head section, power lift, power travel, and cam hinge. Sizes up to 150 feet long build larger stockpiles with a single setting.

MINIMUM SEGREGATION

Kolman's cable suspension design eliminates the segregation encountered with stackers having fixed discharge heights. By raising the stacker as the pile is built, the fall of material is kept at a minimum.

MAXIMUM PORTABILITY

Even the largest Kolman Stackers are on dual pneumatic tires that roll easily on any level surface. Wheel assembles are mounted in quick-change frames to easily shift from radial arc position for stacking to parallel position for moving from one location to another in the stockpile area.

150'x30" Stacker shown includes electric power lift and electric power travel for finger-tip control of stacker discharge position.

100'x24" Stacker in the background stockpiles sand produced with an 8'x48" double-deck vibrating screen on a Model 101 Kolman Portable Conveyor-Screen Plant.

WRITE FOR LITERATURE

KOLMAN MANUFACTURING CO.

4800 West Twelfth Street Sioux Falls, S. D.

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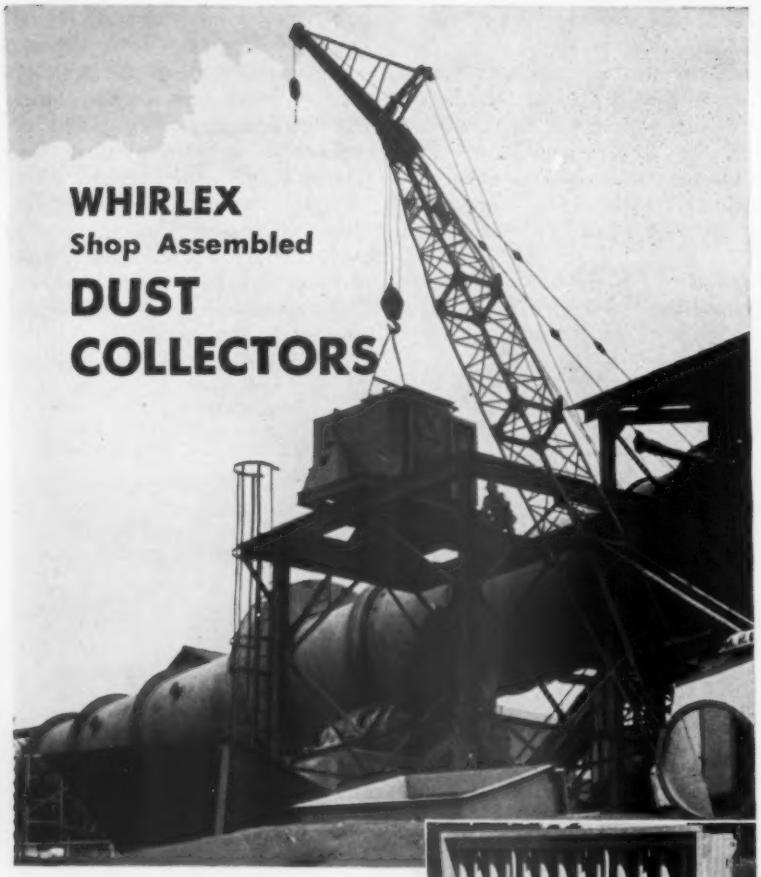
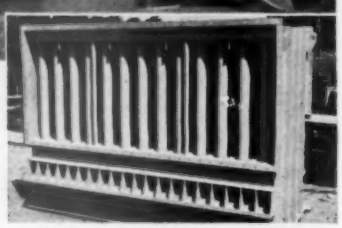


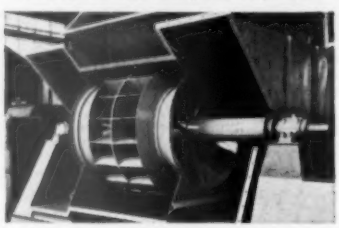
. . . Cut Erection Costs to a Minimum

This highly efficient Whirlex collector is completely shop assembled and need only be bolted in place at the erection site. Rigid shop inspection assures a "gas-tight" installation thus eliminating the opportunity of error at the job site.

A Whirlex Shop-Assembled Dust Collector may be the answer to your problem. Write for more complete information.



Whirlex Dust Collector completely fabricated and ready for shipment



Whirlex FD and ID fans are designed for heavy, rugged duty

Fly Ash Arrestor
CORPORATION
203 North 1st. Street • Birmingham, Ala.

Dust Collectors • Induced Draft Fans
Forced Draft Fans • Exhaust Fans
Self Supporting Stacks • Duct Work

FLY ASH WHIRLEX ARRESTOR

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taxpayers who pay their income taxes, even while complaining, can take comfort in one fact: they are carrying their own full share of government costs. They can sleep peacefully at night, free from the nightmares that assail those who live in fear of a full-scale investigation.

When tax evaders are caught, they not only must pay up their taxes but heavy penalties as well. They very probably will serve a prison term, and live under a cloud thereafter. The cash penalties assessed against them may not only wipe out all their hoped-for "tax-free" savings but most if not all of their legitimate savings as well. This last is a penalty that few taxpayers contemplate when they embark on a tax fraud.

Controlled Blasting

(*Concluded from page* 120)

confidence in consistently peak blasting performance.

Despite the high degree of control achieved with a blasting program that would permit blasting at any time without expectation of complaints, management adds a little cushion: no shots are made at noon, or on Saturdays, when a higher concentration of people in the area might be expected.

Interestingly enough, the neighbors who were once most wrought up over this firm's blasting operations are now among the most enthusiastic supporters; and they have done an effective public relations job among the newcomers to the neighborhood. Not infrequently, civic or private groups are invited in to watch a blasting operation—carried out to the letter, just as it would be without spectators — to see for themselves how little matter for concern there is in a controlled blasting program.

From the broad point of view of the industry, this is another encouraging example of a far-sighted management team that some time back recognized the fact that the "day was coming when quarrymen could no longer blast as they please. We must be realistic . . . People are moving in—they may not have been there first, but they also have rights that must be recognized."

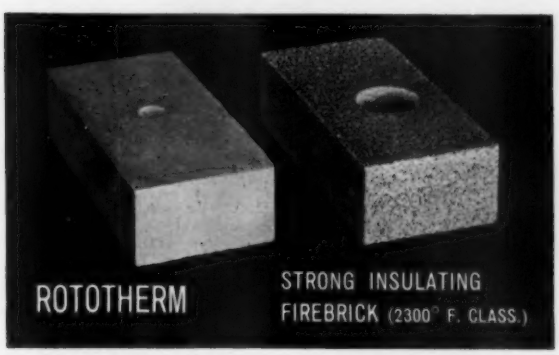
Enter 139 on card, page 207 →

Successful Rotary Kiln Insulation achieved with ROTOTHERM

ROTOTHERM, the strong lightweight brick singular in its combination of properties which are particularly suited for the insulation between rotary kiln shells and hard refractory brick linings. Most significant among these desirable qualities is its characteristic of slight surface compressibility with unusual resistance to pressure rubbing. Although ROTOTHERM is strong, it is not brittle and when subjected to pressure and abrasive action in kiln linings, the surface in contact with the hard refractory brick tends to compress very slightly rather than abrade away.

The momentum and inertia which occurs on stopping and starting rotation of a kiln is accompanied by slippage tendency and friction—causing abrasion. It is this factor which ROTOTHERM satisfactorily withstands.

This property is illustrated by the following simple test:



Brick were held together opposite each other with equal bearing against a revolving steel ball. Depressions illustrate relative resistance to pressure rubbing.

OTHER PROPERTIES OF MAJOR IMPORTANCE FOR THIS APPLICATION:

TEMPERATURE LIMIT	1600°F.
DENSITY—AVE.	51 P.C.F.
COLD CRUSHING STRENGTH	1400 P.S.I.

Relative insulating value of ROTOTHERM—3″ equals approximately 12″ of dense fireclay brick.

Years of gratifying experience with ROTOTHERM in this use of insulating rotary kilns provide the most dependable criteria of its durability and economical use. Write for further details.

HARBISON-WALKER REFRACTORIES COMPANY And Subsidiaries

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World's Most Complete Refractories Service

HW 61 11

here's why

MARIETTA

cuts bulk storage costs

When you store bulk materials . . . you want a storage system that is safe, economical and fits your materials handling concept. Here's where Marietta comes in. Every Marietta Industrial Storage System is engineered to meet precise requirements. And yet, Marietta industrial silos have a built-in flexibility that allows for future use as well as present need. That's because Marietta applies more than 40 years of experience to every phase of planning, design, fabrication and construction.

Standard Industries' new Tulsa production system is built around these Marietta silos.

A Marietta System saves you money, too. It eliminates expensive bagging and ground storage losses. And, it works with any materials handling system to cut costly delays in moving materials to trucks, railroad cars or processing areas. Only Marietta makes four types of concrete staves to give you the silo that best meets your requirements. So, if you store bulk materials . . . consult Marietta for a system that's based on your own particular needs . . . you get fast design and quick erection, too. Write for our Industrial Storage Catalog today.

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Industry Personalities

W. A. Bugge

WILLIAM A. BUGGE, director of the Washington State Highway Department, has been elected 1961 chairman of the Highway Research Board, National Academy of Sciences—National Research Council. Mr. Bugge, who has been active in highway engineering for 40 years, is also vice-president of the American Road Builders Association and chairman of the Highway Division, American Society of Civil Engineers. He is a former president of the American Association of State Highway Officials.

In addition to being elected to the chairmanship of H.R.B. at the annual meeting in Washington Mr. Bugge was chosen to receive the Bartlett Award, the highest honor given in the highway field.

WILLIAM L. KAUFFMAN has been elected controller of The Flintkote Company. He joined Flintkote in 1922 and served in various capacities. He was named assistant controller in 1957.

DENNIS J. MCNAMARA, whom he succeeds, is retiring after 40 years of service with the company.

WILLIAM B. FRANKE, former Secretary of the Navy, has been elected a director of Penn-Dixie Cement Corporation.

Mr. Franke has been active in governmental affairs since 1948. Prior to his government service, Mr. Franke was senior partner of his own accounting firm, Franke, Hannon & Withey, of New York.

CHARLES E. BEARD, president, director, and member of the executive committee of Braniff International Airways, has been elected a member of the board of directors of the Lone Star Cement Corp.

HENRY CLAY HOFHEIMER II was elected president of Southern Materials Company, Inc., Norfolk, Va., upon the retirement of CLYDE F. GREGSON. Mr. Gregson has been president of the company since its organization.

DREXEL C. PAGE, a vice-president, retired at the same time. Both he and Mr. Gregson will continue to serve as directors and will be available for consultation. Mr. Hofheimer will also continue to serve as chairman of the board.

T. H. Stewart

THOMAS H. STEWART has been elected vice-president, in charge of finance for Warner Company, Philadelphia, Pa. Mr. Stewart succeeds CHARLES WARNER JR., who resigned but remains on the board.

Mr. Stewart was formerly general manager and chief financial officer of H. B. Andrews Paper Company, New York, manufacturers of commercial and specialty papers.

T. H. Kassner

THOMAS H. KASSNER has retired from his position as works manager of the Sweetwater (Tex.) plant of United States Gypsum Company after more than 50 years of service. He joined United States Gypsum on August 8, 1909, and has spent the last 18 years at Sweetwater.

Enter 141 on card, page 207 →

Just RIP TIP and POUR

You don't have to mix these new economy blasting agents

DU PONT NILITE® 101 AND 202

The minute you tear the corner off your first 50-lb. bag of "Nilite" 101 or higher-density "Nilite" 202, you'll enter a new era in blasting.

Now at last you have two low-priced, free-running blasting agents that give you Du Pont quality performance, shot after shot.

You don't mix "Nilite" on the job. You don't mix it at all. Just rip open the bag and pour it into any hole—small, medium, large—from 2″ diameter up. No clogging, no bridging in the hole.

No clouds of dust, and no ingredient to cause headaches. No messy oil-stained bags.

But easy loading is only part of the story of "Nilite." For full data on rock-breaking power, better propagation, greater safety and other advantages, send for our new fact sheet on "Nilite" or call your Du Pont distributor or representative. Start saving on your blasting . . . soon. Du Pont, Explosives Department, 6440 Nemours Building, Wilmington 98, Del.

Flows freely even in holes as small as . . .

DU PONT
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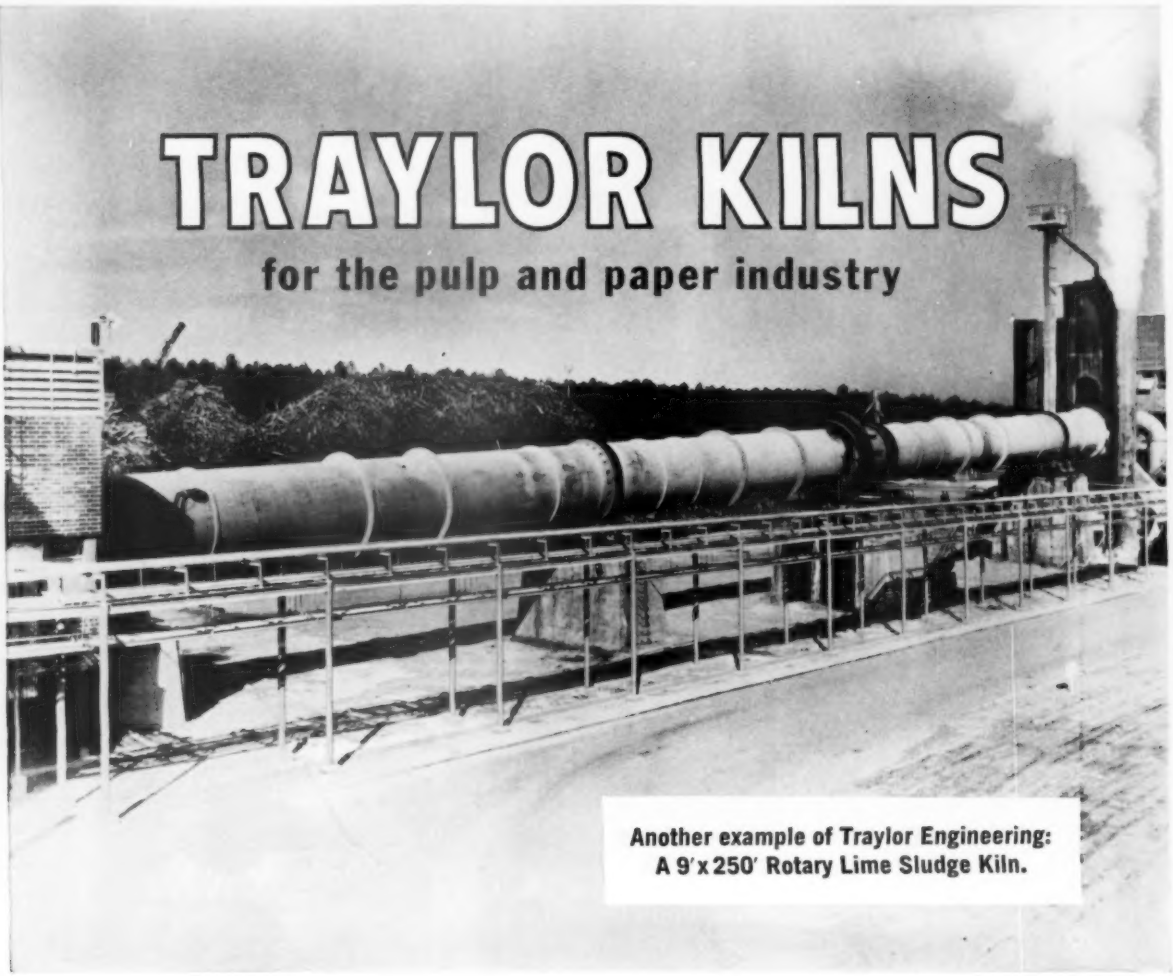
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

NILITE®

TRAYLOR KILNS

for the pulp and paper industry



Another example of Traylor Engineering: A 9′ x 250′ Rotary Lime Sludge Kiln.

One of the most important advantages of Traylor Lime Sludge Kilns in pulp mill operations is their money-saving efficiency in recovering lime for reuse over and over again. This, plus Traylor's unexcelled heat recovery systems and thorough, experienced attention to engineering details, produces kiln installations that are notable for continuous service.

Write for Bulletin TKB-3 on Heat Recovery Systems, or Bulletin No. 1115 on Traylor Kiln installations.

See Chemical Engineering Catalog for details and specifications

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TKB

FREDERICK E. BROOKWELL has been named district sales manager in Philadelphia for the United States Gypsum Co. He joined the firm's sales force in 1949 at Newark, N. J., and has served as the Hudson Valley district manager since 1959.

C. V. O. Hughes

C.V.O. HUGHES has been appointed manager of Virginia-Carolina Chemical Corporation's phosphate mining operations in Florida. Mr. Hughes, who has been with V-C nearly ten year succeeds H. L. PASCOE, who has been named special assistant to the vice-president for mining.

Concurrently, ROBERT S. MURPHY, former superintendent of V-C's fertilizer plant, was named personnel manager and safety director.

H. C. Bohn

HOMER C. BOHN, one of the first sales representatives of the two-year-old Dundee Cement Company, has been promoted to technical service engineer. Mr. Bohn, who joined Dundee in 1959, had previously served as a civil engineer with Michigan State Highway Department.

JOHN C. MUNDT has been appointed vice-president in charge of administration of foreign subsidiaries for the Lone Star Cement Corporation.

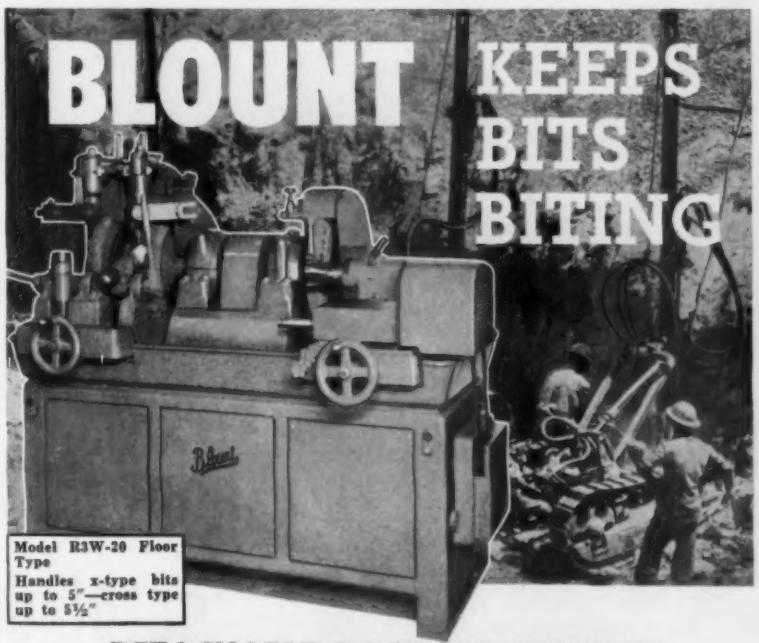
Two promotions have been made on the Ideal Cement Company's executive staff. E. F. SAULSBERRY, who has been in charge of purchasing, was elected vice-president in charge of purchasing.

FRANK PRICE, who has been in charge of labor and personnel relations, was elected vice-president in charge of industrial relations.

FRANK J. CROSBY has been promoted to the position of supervisor, sales services, for the New York Trap Rock Corporation. Mr. Crosby joined Trap Rock in 1950 as a member of the accounting force and transferred to the sales department in 1957.

A. BLAKE CORNTHWAITE has been appointed managing engineer of the Atlantic-Gulf Division of The Asphalt Institute. Mr. Cornthwaite has been engineer in charge of the Materials & Tests Division, Virginia Department of Highways.

His new duties will include directing the engineering activities of the institute in the 20-state area along the Atlantic and Gulf coast and Tennessee. Division headquarters will be in Washington, D. C.



DETACHABLE ROCK BIT GRINDER CUTS DOWN-TIME – LENGTHENS BIT-LIFE

BLOUNT machine-sharpens carbide-tipped rock drills far more accurately than any operator, however skilled, can by hand — and up to five times faster!

When you recondition your rock bits on a BLOUNT GRINDER, you can be sure of a uniform, symmetrical grinding job, including the exact angles the manufacturer intended.

Put a BLOUNT GRINDER to work for you, and get the savings so many customers report!

- ★ Longer bit-life — more regrinds per bit
- ★ Faster drilling
- ★ Reduced drilling upkeep
- ★ Lower cost per foot of drilling

PARTIAL USER LIST
Blount Bit Grinders:

Merritt Chapman & Scott Corp.
Morrison Knudsen Co.
Shea-Kaiser Morrison
Arch Dam Constructors
Litoria Mining Co.
Quebec Cartier Mining Co.
Jones & Laughlin Steel
Vulcanos do Brazil
National Asbestos Mines, Ltd. (Thetford Mines)
Central Electric do Furnas
Vulcan Materials Co.—Stockbridge Stone Co.

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WITH FULL-LOAD PERFORMANCE FULL TIME.....

Planet Power-steered..Hi-Lo outblade clutch-steered

With exclusive "live track" Planet Power-steering, the International TD-25 makes full-load, full-power turns—or slams straight ahead with offset loads—where giant clutch-steered rigs slip and slue. With exclusive Hi-Lo, on-the-go power-shifting, the "25" gives you instant cut-to-fill matching of power to condition. You roll up big loads—and keep 'em rolling. With exclusive International DT-817 engine wallop the "25" bulls along, 230 turbocharged hp strong—without "slow-motion" lug-downs, even at high altitudes! Prove to yourself the planet-drive "25" clobbers all comers—outpushes or outpulls 'em up to 50% —*and with standard equipment.* Let your International Construction Equipment Distributor demonstrate.

Dozing volcanic cinders for railroad ballast, this International TD-25 beats the combined production of two similar-sized clutch steered crawlers on the same job! Reason: Hi-Lo power-shifting gives exclusive 4-speed torque-converter efficiency-range control. The "25" delivers heaped loads every pass! To defy "grinding compound" conditions, the "25" undercarriage has heavy-duty Dura-Rollers.

Even with an enormous offset load of shot rock there's no "bank-nosing," no sluing. The TD-25 operator simply runs the load-side track in high-speed range—the other in low-speed range. Result: full-capacity, straight-ahead performance—which the "25" also gives on benching, bank-cutting, and side-casting! In the same way, you make full-load turns—because Planet Power steering eliminates "dead-track drag!"

With Hi-Lo on-the-go power-shifting you shift down, to dig hard material—shift up, to "run" with the load. And to make full-load turns without spillage, use Planet Power steering: down-shift the turn-side track, and you've got it made! When push-loading with the "25", you maintain solid contact on straight-away or curve—to speed heaping the bowls and get gear-higher "kick-outs"!

power-shifted "25's" crawlers up to 50%!

With the same 2-finger ease as on dozing or push-loading, you steer the TD-25 pulling heaviest drawbar tools. This "25" is deep-ripping "concrete-like" mountain clay that has to be shattered before dozer can move it economically. The "25" has the super undercarriage strength of double-box-beam track frames—for full-capacity performance.

International® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

Enter 144 on card, page 207

ERNEST E. HAUPT, manager of sales development and national accounts for B. F. Goodrich Industrial Products Company, has been elected to the board of directors, Manufacturers Division of the National Crushed Stone Association.

JOHN C. BAYLESS has been named manager of engineering geology operations for Doeringsfeld, Amuedo and Ivey, (Denver, Colo.) consulting geologists.

Prior to this affiliation, Mr. Bayless has been an engineering geologist for Texaco, Inc., and a teacher of geology at Michigan State University.

Several executive and supervisory changes in management of Warner Company's construction materials operations and sales have been announced.

FRANCIS V. J. HAGGERTY was elected vice-president of sales, Construction Materials Division, by the board of directors on January 4. He was formerly general manager of the Construction Materials Division of the company.

FRANKLIN K. WILLS, formerly resident manager in the Morrisville area, has been appointed general manager of operations, Construction Materials Division.

JOHN ZELEK, formerly general superintendent of the Van Sciver plant, was named manager, Morrisville area plants and operations.

Medusa Portland Cement Company has announced the appointment of BURDETTE G. NEAVILL as controller, HENRY J. KREBS as director of purchases, and CARL A. BENZIGER as purchasing agent. They

B. G. Neavill

H. J. Krebs

fill vacancies left by the retirements of AVERILL B. PFEIFER, who had been controller, and an employee for 37 years; and GEORGE E. KLEINOEDER, purchasing agent, with 43 years of service.

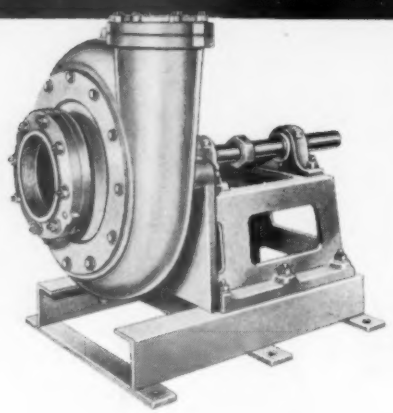
Mr. Neavill joined Medusa in 1957. As controller he is responsible for budgeting and accounting.

Mr. Krebs has been with the firm 44 years. As director of purchases he will co-ordinate Medusa's annual purchase bill of approximately 13,000,000.

J. M. Huffman

JAMES M. HUFFMAN has been named plant manager of the National Gypsum Company's Kimballton, Va., plant. He succeeds MONROE RULE, who died on December 22, 1960. Mr. Huffman joined National Gypsum Company in 1947, and has served as mine foreman, kiln foreman, mine superintendent, and production superintendent.

LOWEST-COST HANDLING of FINE, ABRASIVE SOLIDS



Lightning MODEL RU

RUBBER -LINED PUMPS

- No Adjustment Necessary
- Only 3 Wearing Parts
- Semi-Open, Non-Clogging Impeller
- Stainless Steel Shaft
- *OUTLASTS METAL 5-10 Times on Slurries of 100% Minus ¼"*

LIGHTNING Model RU cuts costs on hydraulic transfer of silica sand, glass sand, coal silt and other fine, abrasive slurries. Initial efficiency remains steady without maintenance. The rubber lining, not affected by abrasion, outlasts any hard, alloyed metal. Model RU is available in 8x10", 6x8", 4x6", or 3x4" size. Its simple design insures maximum endurance and performance.

"Sixty years of service to the sand and gravel industry." We offer a complete line of pumps, including new ceramic-lined models. Write for full information.

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Performance records prove International® best buy!

15 YEARS
OF SERVICE

12 YEARS
OF SERVICE

NEW UD-817 BACKS VETERAN IH DIESELS ON MULTI-CRUSHER SETUP FOR PLAUTZ BROS., WILLARD, WISCONSIN

Take a look at performance records when you choose power for heavy-duty crushing operations. That's what the Plautz Brothers did, then they bought another International! They checked 27 years of outstanding service—12 years from an International UD-24, and 15 years from an International UD-18. In all that time, the "24" had one part replacement, and the "18" needed a valve job.

The new 250-hp UD-817 supplies power for the first conveyor and the primary crusher, a Universal Breaker that takes 30-inch rock. Next in line is a Pioneer 20 x 36 jaw crusher driven by the 15-year old UD-18. Final unit is a Pioneer triple-deck 40-inch roll with a 4 x 10 screen, driven by the 12-year old UD-24. The plant produces 1,000 yards of 7/8-inch material per 10-hour day.

When you need steady, low-cost power for year-in-year-out operation of heavy-duty equipment, check with your nearby International Engine Distributor or Dealer. He'll give you complete information on 35 rugged engines—16.8 to 385 max. hp—plus installation assistance, if you need it. Call him soon.

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IH ENGINES

International Harvester Co.,
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"WE USE LUBRIPLATE LUBRICANTS IN TEMPERATURES DOWN TO -60°F"

says UNITED KENO HILL MINES LTD. of Whitehorse Y. T. (Canada)

To further quote Mr. W. C. Whitehouse, the mechanical superintendent of their Transport Division, "We are using LUBRIPLATE Lubricants in engines, transmissions, final drives and wheel bearings of all our machines. Six LUBRIPLATE products satisfactorily lubricate all our equipment both Winter and Summer."

W. C. Whitehouse, Mechanical Superintendent

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

Enter 148 on card, page 207

Legal Decisions

On Industry Problems

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

DURING THE winter of this year the writer traveled several states, and talked personally with many readers of PIT AND QUARRY. Many important legal questions and problems involving these persons were discussed. During the succeeding weeks I made special effort to locate higher court cases directly to point, and which answer certain of these legal questions. Hence, the purpose of this article is presentation of legal questions. for the benefit of all readers and citations of leading higher court decisions which verify my explanations of law. And most important is the matter of assisting readers to avoid future legal controversies, and win unavoidable suits.

Can't Defraud Creditors

A reader asked this question: "If a contractor knows that he is low on finances, can he get out of paying for materials by selling or assigning his assets?"

The law in this respect is that no creditor can avoid paying honest debts by assigning or selling his assets.

For example, in *Ralph Keno* v. *Katterjohn*, 230 S. W. (2d) 89, the testimony showed that the Katterjohn Concrete Products Company sold a considerable quantity of concrete block to a contractor named Keno, who failed to pay the amount due for the blocks. Keno, realizing that the concrete products company would demand payment for the blocks and probably file a suit, sold and transferred to his father a valuable motor truck.

The concrete products company sued Keno for $1,855.70, with interest, for the concrete blocks sold to him, and asked the court to issue a general order of attachment against Keno's property, including the motor truck which Keno had transferred to his father a short while before the suit was filed. The Katterjohn Concrete Products Company asked the court to cancel this transfer and sell the truck to satisfy the debt.

Both Keno and his father went to great lengths to convince the court that the transfer was made in good faith and with no intention of defrauding the Katterjohn Concrete Products of the $1,855.70 due for the concrete blocks. Nevertheless, the higher court ordered the truck taken from Keno's father and sold to satisfy the debt owed by Keno.

Law of Attractive Nuisance

It is well known that any property owner or corporation may be liable in heavy damages for maintaining any dangerous thing that is unusually attractive to children.

A few weeks ago a higher court rendered an outstanding decision to the effect that an unfenced and unguarded pond or pool of water used generally for swimming is not an attractive nuisance because (1) such places do not create a condition of unnatural, concealed, or special danger, nor do they involve an unreasonable risk of death or serious bodily harm; (2) the possible hazard of use is generally appreciated even by children of tender years; and (3) the practical impossibility of adequately guarding such places from the invasion of venturesome boys would impose upon the landowner a duty entirely disproportionate to the risk of injury.

(*Continued on page* 150.)

Enter 149 on card, page 207 →

Open the clam, position the blade segment, and the 4-in-1 doubles for a full-size, full-capacity bulldozer on overburden removal. Regulate dozing depth by *radius control.*

Pull down materials by the truckload from sand, clay or gravel bank—with 4-in-1 back-drag action. Clam-handling increases efficiency of manpower and horsepower; cuts costs.

Clearing to remove overburden, clam-on to stumps, brush, slabs of rock or other "impossibles" with the International Drott 4-in-1. Then use this *bucket with the bite* to load or pile what other loaders can't touch!

Only the 4-in-1 gives you

Clam-handling efficiency!

Why limit your income to what an old-style, "single-action" loader can earn you? Compare what it means to clam-handle your whole job with exclusive 4-in-1 "equipment spread" utility. See how each 4-in-1 action "doubles" for one or more special-duty machines—to multiply your ability to make money. Prove to yourself how many "machines" a modern loader can be. See your International Drott Distributor for a 4-in-1 demonstration!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

Positive, self-cleanout bottom dumping lets you clam-handle sticky materials that idles ordinary buckets—lets you spot-load materials with accuracy—gives controlled dumping that protects truck bodies. (These pictures all show the same TD-15 Four-in-One, owned by Door County Highway Commission, Sturgeon Bay, Wisconsin.)

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PLUS ECONOMY
REPLACE WITH
INDIAN BRAND

Get the most out of your present equipment. When you need replacements, remember we started in 1913 to build our reputation in the Manganese Steel field for dependability plus economy.

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Mantles • Concaves
Bowl Liners • Roll Shells
Pulverizer Hammers
Grate Bars • Breaker Plates
Ball Mill Liners • Screen Plates
Misc. Manganese Steel Castings

THE FROG, SWITCH AND
MANUFACTURING COMPANY
Carlisle, Pennsylvania • Established 1881

Enter 150-A on card, page 207

For example, in *Hanners* v. *Ashland,* 331 S. W. (2d) 729, it was shown that an excavation was filled with water from a depth of 12 to 35 feet. The testimony showed that, in the summertime, children as well as adults often frequented this pool of water to swim. A child of eight years old drowned while swimming.

In subsequent litigation, the higher court refused to hold that parents of the child could recover damages from the corporation which owned the excavation, saying:

"Negligence cannot be predicated simply upon the failure of a landowner to prevent a trespasser from taking a commonly known and appreciated risk in the customary use of such a facility."

For comparison, see *Schauf's* v. *Pad,* 50 S. W. 42. There, a seven year old child drowned while wading out into an abandoned gravel pit filled with water. In view of the fact the premises did not have a concealed danger, and considering the practical impossibility of preventing trespassing boys from engaging in athletic sports around water, it was held the corporation was under no duty to guard against such contingency as drowning.

Can Cancel Contract

A few weeks ago a higher court held that if the lessee of land breaches his contract, the property owner can at once cancel the lessee's contract.

For illustration, in *White* v. *Capar,* 150 N. E. (2d) 18, one White contracted with a property owner to remove the sand and gravel from the property. Also, White agreed to assume the obligation of building a temporary road and clearing trees. White failed to complete the work as he agreed. Thereupon, the property owner terminated the agreement, and cancelled White's contract.

In subsequent litigation, the higher court held that the property owner had this legal right to cancel the contract, saying:

"The plaintiff (White) failed to complete the work he had agreed to do and the defendant (property owner) with justification terminated the agreement."

Inhalation of TNT Caused Injury

The owner of a rock quarry wants to know whether or not an employee who suffers a disability by breathing impure air can recover compensation.

According to a late leading higher court decision the answer is in the affirmative.

For example, in *Liberty Insurance Company* v. *Thompson,* 171 Fed. (2d) 723, it was shown that an employee had no mask to protect his nose and mouth while he was unloading boxes that contained TNT. Soon afterward he began to feel weak, began vomiting, and then fainted. A physician who administered to him later testified that the employee was suffering from a condition known as pernicious anemia, which is the inability of the red bone marrow to produce red blood cells properly.

In subsequent litigation, the higher court awarded the employee compensation under the State Workmen's Compensation Act and said:

"It is generally recognized medically that TNT may cause a deficiency of this bone marrow or an

PROPER APPLICATION OF SCREEN SECTIONS

When installing a vibrating screen section, be sure it is centered and aligned. Take up tension from both sides of the vibrator to maintain centered position and keep hooked edges from deforming — exam circle above. Tension or pull must be horizontal to prevent whipping or slipping of screen sections. Check the application carefully. Call Cleveland Wire Cloth for valuable assistance and top quality vibrating screen section cloth.

Write for FREE maintenance-reducing check sheet today.

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injury to it, because TNT has a poisonous effect on the red bone marrow . . . That appellee (employee) became disabled in the course of his employment after breathing quantities of TNT dust is clearly established by the evidence."

Breached Lease Contract

An official of a gravel company asked: "If a sand and gravel company has failed to follow and comply with details of its lease contract, can the property owner cancel the lease, although the gravel company is now willing to fully comply with all terms and requirements of the lease contract?"

Modern higher courts consistently hold that a property owner may cancel a gravel company's lease contract if the company breaches one or more clauses in the contract. An offer by the gravel company to comply with the terms of the lease will not avoid cancellation.

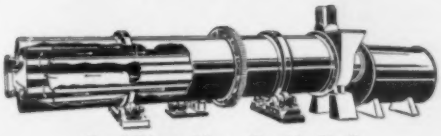
For illustration, in *Drew Gravel Company* v. *Stell,* 20 S.W. (2d) 609, the testimony showed facts, as follows: The Drew Gravel Company leased certain real property from its owner from which to excavate gravel. The lease contract contained a special clause which specified that the gravel company agreed to pay a stipulated amount for gravel it excavated and also pay a cash rental of $50.00 each month no gravel was removed from the property. Another clause in the lease contract provided that under no circumstances should the property remain idle and no gravel be taken therefrom for more than three consecutive months.

The gravel company failed to pay the $50.00 monthly rent and, also, failed to excavate gravel from the property for a longer period than three months. The property owner filed suit to cancel the lease.

The legal counsel for the gravel company argued that the lease should not be cancelled, although the $50.00 monthly rentals had not been promptly paid and the company had failed to mine gravel for a period of over five months because the company was then ready to begin excavating gravel and pay the overdue rentals. (*Continued on page* 154)

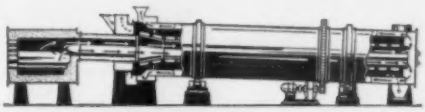
Ruggles Coles®

ROTARY DRYERS, HEATERS AND COOLERS

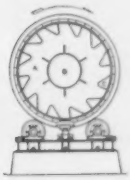


Semi-Direct Heat, Double-Shell Dryer, ideal for coal drying.

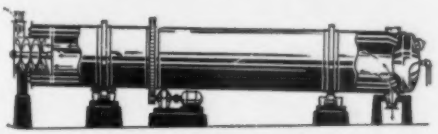
Cross section of Semi-Direct Heat, Double-Shell Dryer showing lifting flights on inner and outer shells.



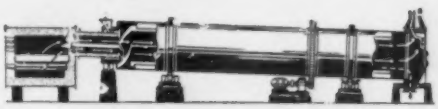
Indirect-Heat, Double Shell Dryer for kaolin, chalk, china clay, etc.



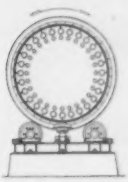
Cross section of Indirect Heat Dryer. "A" is the completely isolated space in which the material is dried. "B" is the inner hot gas passage. "C" represents the V-ducts for the gas return.



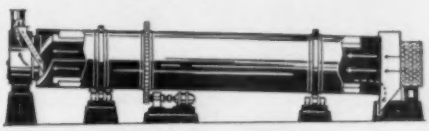
Rotary Steam-tube Dryer designed for raw chemicals.



Single-Shell, Direct-Heat Dryer Parallel or Counter-Flow for sticky organic or inorganic materials.



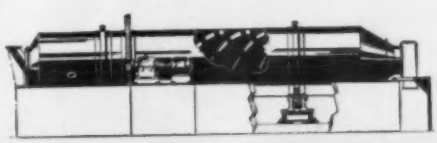
Cross section view of Steam Tube Dryer.



Hot-Air Dryer for drying inorganic salts and similar materials.

Rotary Kiln for continuous calcining, roasting or oxidizing.

Cross section of Single-Shell, Direct Heat Dryer.



Rotary Cooler for continuous cooling of hot materials after drying or calcining.

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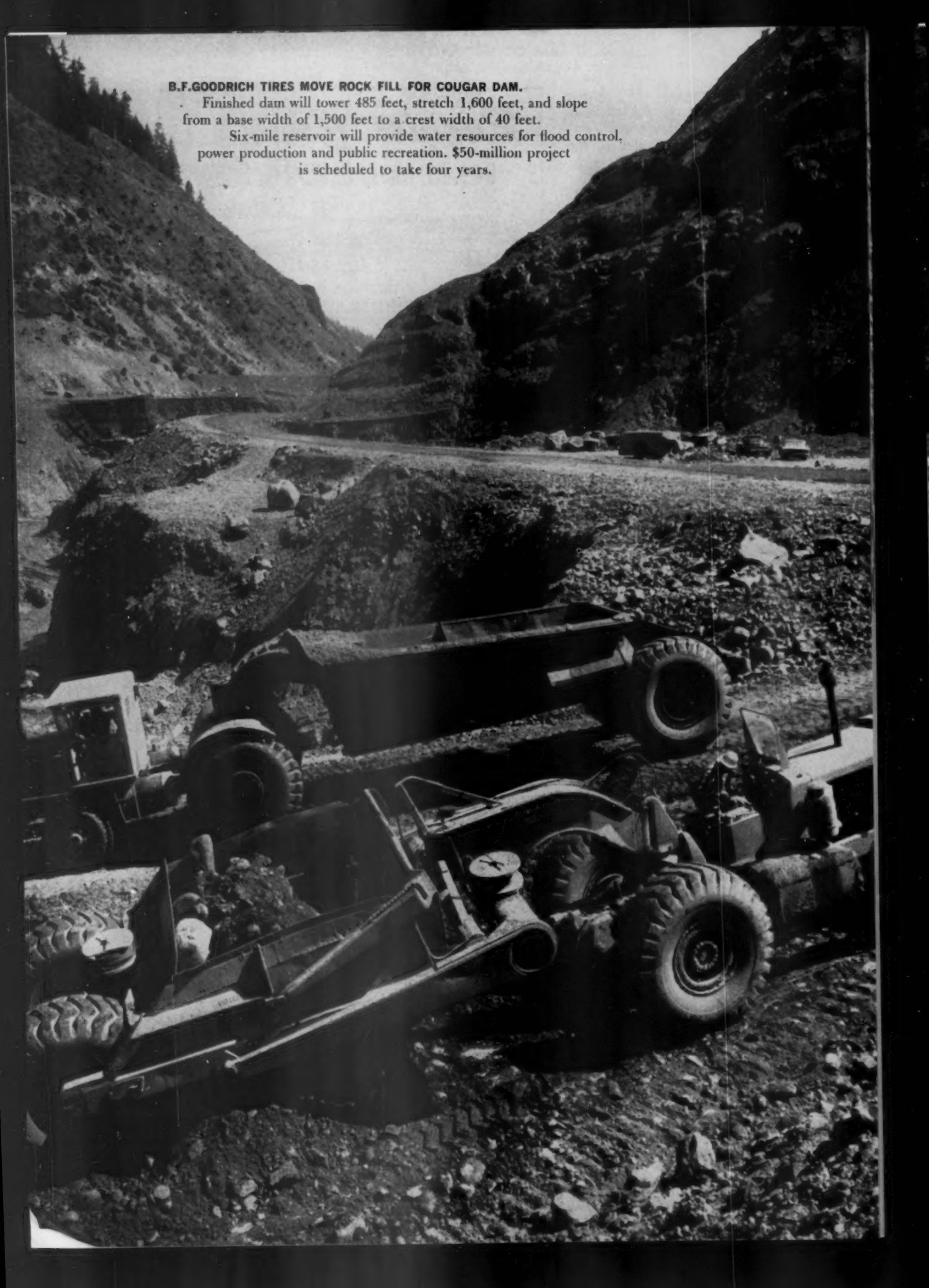

B.F.GOODRICH TIRES MOVE ROCK FILL FOR COUGAR DAM.

Finished dam will tower 485 feet, stretch 1,600 feet, and slope from a base width of 1,500 feet to a crest width of 40 feet.

Six-mile reservoir will provide water resources for flood control, power production and public recreation. $50-million project is scheduled to take four years.

30 TONS OF ROCK CRASH onto B.F.Goodrich Rock Service tires. Tires work two shifts a day on scrapers, bottom dumps, rear dumps, water wagons, graders, rollers and mobile cranes. Yet it's not unusual for tires to be retreaded twice.

CONTINUOUS TIRE INSPECTIONS play a key role in keeping M-C&S' equipment on the go. The B.F.Goodrich Unified Contractors Program helps contractors save on all their rubber products—and protective clothing—requirements. Ask your BFG dealer to show you how this new program can help *you*.

B.F.Goodrich helps move a mountain to build a dam

B.F.GOODRICH ON-THE-SPOT SERVICE helps M-C&S get the most out of equipment. Tire changes seldom take longer than 15 minutes. BFG Servicemobiles carry all the latest power tools, are manned by tire experts.

12-MILLION CUBIC YARDS OF ROCK AND EARTH FILL RIDE TO $50-MILLION COUGAR DAM PROJECT ON B.F.GOODRICH TIRES

They're changing the topography of Oregon's Willamette Valley. Rock quarried from a knob high above the South Fork McKenzie River is taxied down a tortuous road by a fleet of giant earth movers. It will become part of the fill for Cougar Dam, a Corps of Engineers flood control project that will be the largest structure of its type in the Northwest.

Altogether, general contractor Merritt-Chapman & Scott Corp. will move 12-million cubic yards—every one on B.F.Goodrich tires. You'll find B.F.Goodrich Rock Service tires with Cut Protected compound hard at work here. BFG developed this compound for jobs like Cougar Dam, where upwards of 30-ton loads must be carried over hard, rock-surfaced roads. It takes a mighty big boulder to gash this compound, and if it should, there's BFG Flex-Rite Nylon cord construction to withstand the impact (and resist heat blowouts and flex breaks too). No wonder many Rock Service tires at Cougar Dam can be retreaded twice.

B.F.Goodrich on-the-job service plays a key role in keeping M-C&S equipment on the go. All 600 BFG tires are inspected regularly. Tire changes seldom take longer than 15 minutes. There is a BFG tire warehouse and shop less than a mile from the project. A BFG tire record system keeps the contractor informed of costs and helps control inventory.

Supplying contractors with longer-wearing tires and dollar-saving service is an everyday job for B.F.Goodrich. On many projects B.F.Goodrich supplies everything from tires to boots to belts through its new Unified Contractors Program. Whatever *your* need, it will pay you to talk to your B.F.Goodrich dealer. His know-how can make a big difference in your profit picture. Look him up under Tires in the Yellow Pages. *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment**

B.F.Goodrich

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GILSON

TESTING SCREEN

Controls and guarantees your product. Fast, accurate, trouble-free test sizing of crushed stone, sand, gravel, slag, etc. Size range: 4-in. to 200-mesh.

SAMPLE SPLITTER

Reduces large samples for convenient testing. Adjusts for all materials, sand to heavy aggregate. Simple to use. Heavy welded steel construction.

Porta Screen

Portable. Motor or hand driven. Operates free-standing. Samples up to 25 lbs., 1½-in. to 200-mesh. Does not replace GILSON Testing Screen for heavy-duty test sizing.

Write for detailed literature

GILSON SCREEN CO.
MALINTA, OHIO

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It is worthy of note that the higher court held the lease legally forfeited, saying:

"It is admitted that for five consecutive months the plant had not been operated, nor had the rent been paid . . . It is true that the lessee (gravel company) offered to pay the past due rents; but, if the right to cancel had then accrued, this right was not destroyed by the belated tender."

Private Contractors Not Exempt

Last month a higher court held that although a state law exempts state, county, or city owned motor trucks from ordinary weight limitations, this law does not exempt private or ordinary contractors who own motor trucks used to haul materials for the state, county, or city.

For example, in *State* v. *Foster*. 352 Pac. (2d) 502, a state law was litigated which provides that motor vehicles used by an incorporated city in the construction, maintenance or repair of public highways are exempt from weight limitations applicable to all other vehicles.

A motor truck driver was convicted of violating this law and fined $300.00. It appears that this driver was employed by a contractor engaged in street construction under a contract with a city.

The higher court held that if the motor truck had been owned by the city the driver's fine would have been illegal. However, since the vehicle was owned by a contractor, the higher court held that he must pay the assessed $300.00 fine, saying:

"We find in the legislative history of the statute exempting government vehicles from the statutory size and weight restrictions no indication of a legislative intent to exempt vehicles operated by private contractors."

Law of Contracts

Last month a higher court rendered a decision unusually important to readers who want to prepare to win law suits involving contracts.

From a reading of this outstanding decision it is quite apparent that the contracting party who lost more than $200,000.00 in this litigation could have won it had he known just two simple and basic points of established law, namely first, that generally a contract in which the seller of a business agrees not to enter into a competitive business is valid and enforceable; and, second, the statute of limitation provides that the right to file a suit on a breached contract accrues on the date the dissatisfied party complains or makes a demand on the other contracting party.

For illustration, in *Stice* v. *Peterson*, 355 Pac. (2d) 948, the testimony showed these interesting facts: A man named Stice sold for $100,000.00 his interest in the Colorado Pre-Mix Concrete Company to a group called the Meyers group. The contract contained a clause in which Stice agreed to not enter into a similar business in competition with the Meyers group for a period of ten years. Apparently Stice believed that this restrictive clause was not valid and enforceable because, soon afterward, he started the construction of another concrete plant. While this plant was being constructed, Stice learned that the Meyers group was threatening to sue him for a

NO SPOT FOR A BREAKDOWN!

KEEP IT GOING AT ITS BEST ...USE ONLY GENUINE HAYWARD REPAIR PARTS!

Hayward Buckets are designed with the most efficient construction features known. And only with genuine Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise operating costs and disrupt schedules.

Anticipate any possible breakdown.
Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY
50 CHURCH STREET, DEP'T P, NEW YORK 7, N. Y.
Builders of Better Buckets Since 1888

Enter 154-B on card, page 207

breach of his contract not to compete. Stice had expended so much money in constructing the new concrete plant that he decided to purchase back from the Meyers group the Colorado Pre-Mix Concrete Company he had sold six months previously.

Stice checked the asking price and found it to be $200,000.00 or $100,000.00 more than the sum for which he had sold it. He also discovered that the Meyers group would have nothing to do with him personally.

Personally Stice had purchased sand and gravel from the Peterson's Rio Grande Gravel Company to operate the plant of the Colorado Pre-Mix Company. Mr. Peterson wanted Stice to buy back the Colorado Pre-Mix Company so that he could again sell sand and gravel to this company. Hence, Peterson agreed to assist Stice with the proposed repurchase of the Colorado Pre-Mix Company. Stice retained Peterson's lawyer who repurchased the Colorado Pre-Mix Company as agent for an undisclosed principal. Afterward Stice and Peterson entered into several different contracts and agreements, among which Stice alleged that Peterson promised to pay him $100,000.00 as commissions and compensation. In other words, this agreement was a compromise of disagreements as to the value of services rendered by Stice with respect to sand and gravel contracts allegedly obtained by Stice for Peterson.

It may, or may not, be presumed that Peterson made these agreements so favorable to Stice, because of profits being earned and to be earned in the future from sale of sand and gravel to the Colorado Pre-Mix Company, and any other contracts made by Stice with outside companies which use considerable quantities of sand and gravel.

On June 1, 1951, another contract was signed by Stice and Peterson relating to the $100,000.00. This latter contract was made after Stice had demanded that Peterson pay him the agreed $100,000.00.

It is important to note therefore that Stice's right to sue Peterson for $100,000.00 accrued on this date of June 1, 1951, because of his demand for payment.

WHAT'S A SURE THING?

Joe Ambrosio will tell you it's Bonded Buy used equipment from his Caterpillar Dealer

Joe Ambrosio likes the independence of being in business for himself. His independence hinges on success . . . and a big part of Joe Ambrosio's success comes from reliable used equipment . . . the kind he buys from his Caterpillar Dealer.

Four years ago Joe bought a used D6 and learned that there's a big difference between used Cat equipment and other used equipment. Early in 1959 he went back to his dealer, bought a *Bonded Buy* 977 Traxcavator. "The loader's done better than I expected," Joe says. "It's worked almost every day since I got it—backfilling, rough grading, loading, clearing trees, dozing rock. It's been as dependable as a new machine."

If *you're* setting up a spread, getting your start as an independent businessman; or if you're adding to your existing spread for a busy season . . . there are no better values than *Bonded Buy* used Cat equipment.

If you want a sure thing, see your Cat Dealer. His business is built on sure things.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

CATERPILLAR

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BEST BUYS IN NEW AND USED EQUIPMENT

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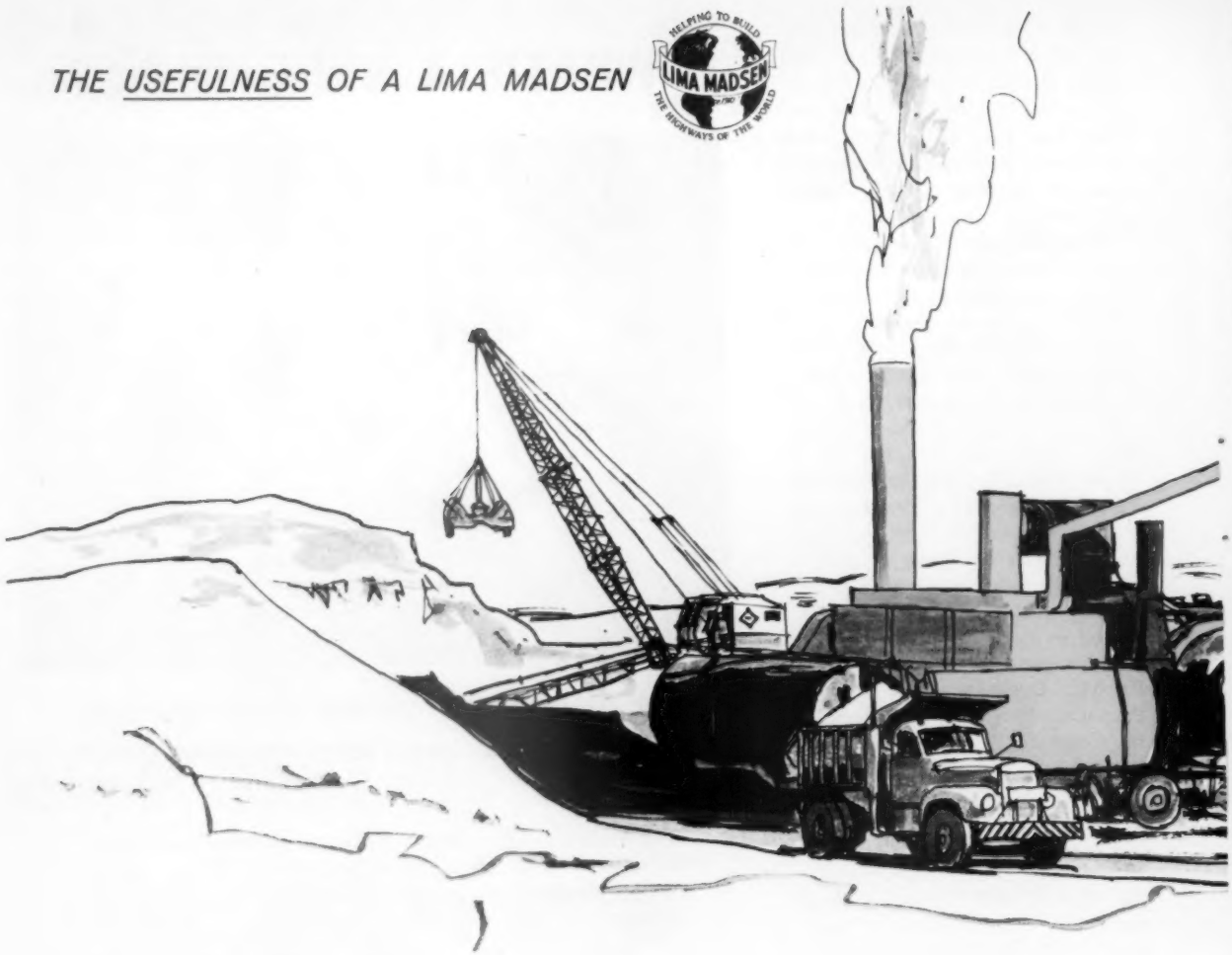
THE USEFULNESS OF A LIMA MADSEN



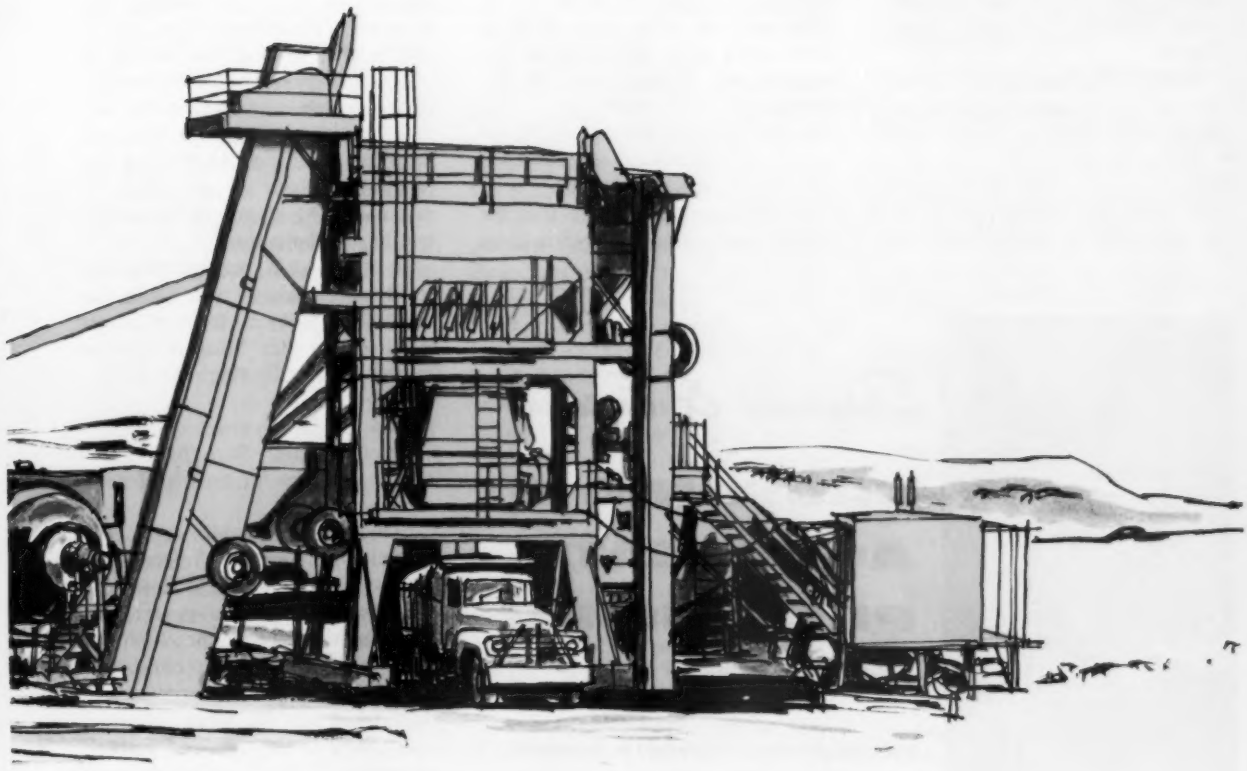
BIG TONNAGE PRODUCER . . .
EASILY MOVED FROM JOB TO JOB

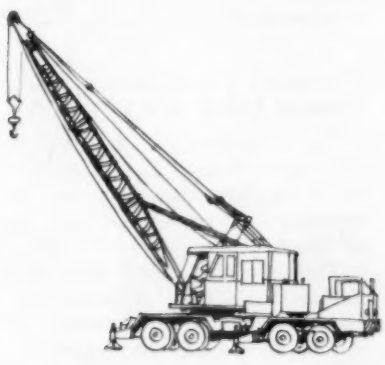
Unit design construction of Lima Madsen Asphalt Plants means easy stacking in factory-matched sections; rapid field erection and dismantling. Screen bin, mixer weighbox, hot stone elevator, dryer, dust collector, and cold feeder may all be wheel-equipped at the factory or in the field. Lima Madsens are the ideal plants for the contractor who is after big-tonnage output and tops in portability.

Combine extreme mobility with proven capacity to turn out high tonnage day in and day out and you can see why Lima Madsen owners consistently net greater profits on all types of jobs.

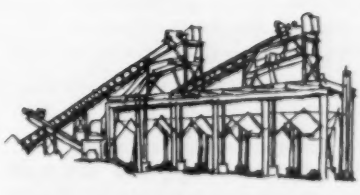
There's a size and model, portable or stationary, to meet every asphalt mixing need; capacities from 1000 to 10,000 lb. per batch. Why not ask your Lima Madsen distributor for more information or write us for free literature.

6118

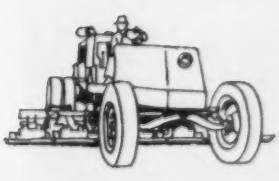




LIMA CRANES AND SHOVELS—Interchangeable front ends. Cranes to 140 tons—80 tons on rubber; shovels to 8 yd.; draglines variable.



LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment. Simplified design, easy maintenance.



LIMA MODEL D ROADPACKER—Fast, deep vibratory compaction for single-course construction; available in Super model.

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LIMA MADSEN

Asphalt Paving Plants and Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

Unknown to Stice a state law, known as the statute of limitations, provides that all suits must be filed *within* six years after the cause of actions shall accrue, and not afterwards. Otherwise the suit is barred forever.

Soon after June 1, 1951, Peterson and Stice signed a four year employment contract under which Stice agreed to work for Peterson for four years at a salary of $1,000.00 per month. Apparently collection of the $100,000.00 which Stice had alleged Peterson owed him was temporarily overlooked and delayed. The matter dragged on until finally on December 20, 1957, Stice sued Peterson to recover the $100,000.00. This suit was filed more than six years after Stice had first made a demand on Peterson to pay this money. A few weeks later Stice brought a second suit against Peterson for $120,000.00 in damages, alleging breach of contract.

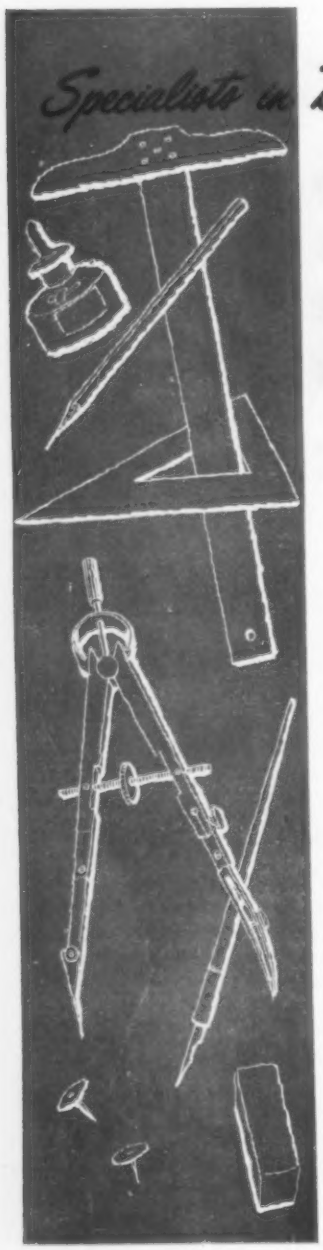
It is interesting to note that the higher court refused to hold in favor of Stice with respect to collection of the $100,000.00, and said:

"Stice stated that the June 1st contract was entered into after his demand or notice to Peterson that he needed the money. The general rule is that a claim for breach of contract accrues as of the date that notice or demand is made. The demand or notice was admittedly made prior to June 1st, 1951, and the plaintiff (Stice) is committed to that date. The statute of limitations is a bar to the action."

In other words, because Stice delayed *more* than six years after he demanded payment from Peterson in filing the suit Stice is forever barred from collecting this $100,000.00.

Also, the higher court held Peterson not liable to Stice for $120,000.00 damages for breach of contract, saying:

"The testimony is too vague and indefinite to support a claim that a contract ever existed. Here the alleged oral contract leaves all terms and conditions in doubt. For example: When does the obligation arise; when and how is it to be paid; what are the terms of payment? Such incomplete and ambiguous contracts have been condemned by this court."



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and especially designed equipment for the ceramic, aggregate and the light-weight aggregate industry.

If your plant processes or stores bulk materials, our engineering specialists can be of invaluable help in speeding up production and lowering the costs of your operations. Whether it's an entirely new plant or a remodeling job, our engineered equipment costs you less, because we build many of the items such as conveyors, elevators, bins, vibrating screens, hoppers, chutes and supports in our own shops.

Our engineered installations in brick, sand, gravel, stone, sericite, ag-lime, and light weight aggregates are producing profits for their owners throughout the East. Call Aggregates Equipment today.

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Workmen's Compensation Law Changes Listed by U.S. C. of C.

The Chamber of Commerce of the United States has published a list of changes made last year in workmen's compensation laws in ten states.

These changes have been described in a special supplement to the Chamber's 1960 *Analysis of Workmen's Compensation Laws.*

The ten states that changed workmen's compensation laws are: Alaska, Kentucky, Maryland, Massachusetts, Michigan, Mississippi, Nevada, New York, Rhode Island, and Virginia. Persons who purchased the *Analysis* will automatically be sent the supplement free. Those who have not bought the *Analysis* can get it and the supplement by sending $1.00 to the Insurance Department, Chamber of Commerce of the United States, 1615 H St., N. W., Washington, D. C.

Manufacturers' News

The formation of the Process Equipment Manufacturers Association was announced following the first annual meeting held in January at the Harvard Club, New York City. One of its principal purposes is to assist its member companies in improving the efficiency of their operations and thereby rendering increased services to their customers.

J. D. HITCH JR., director of Dorr Oliver, Inc., is president; and HARLOWE HARDINGE, president of Hardinge Co., is vice-president. R. P. KITE is executive secretary-treasurer.

The executive committee is composed of: Calvin A. King, president, Bird Machine Co.; P. H. Mulcahy, mgr., Wemco Div., Western Machinery Co.; Harold M. Soars, president, Sprout, Waldron & Co.; A. L. Bolton Jr., treasurer, John W. Bolton & Sons; A. J. Chubb, gen. mgr., Raymond Div., Combustion Eng., Inc.; H. J. Douglas, gen. mgr., Pennsylvania Crusher Div., Bath Iron Works; H. I. Edwards, vice-pres., Pfaudler-Permutit, Inc.; Milton Spiegel, gen. mgr., Chicago Pump Div., Food Machinery and Chem. Corp.; E. C. Swift, president, The Sharples Corp.

Appointment of JAMES R. MILLER to the post of production manager for SKF Industries, Inc. was recently announced. Mr. Miller succeeds J. A. GRAHAM, who joined Bearings Company of America.

In his new post, with SKF, Mr. Miller will be responsible for development and maintenance of production planning and control activities, along with adding the corporate responsibility for inventory planning.

He joined the company in 1957 as manager of production and inventory control. He was formerly manager of production and inventory control for Dresser Industries, Bradford, Pa.

J. B. BOND, manager of the mining, crushing, and process machinery division of Nordberg Manufacturing Company, has announced the following appointments.

HAROLD N. PROPP was appointed western branch manager in the San Francisco office with T. D. DAVIS, former branch manager, continuing in that office as consulting branch manager. S. C. MCCOMB was appointed manager in the Vancouver, B. C. office and JAMES W. MCMANAWAY has been assigned as a sales engineer in Roanoke, Va., for the New York office territory.

The Leeds & Northrup Company is now occupying its new Chicago district office at 101 So. Washington St., Park Ridge, Ill. This office serves northern Illinois, western lower Michigan, Iowa, Nebraska, and the Dakotas west of the Missouri River.

C. L. FROST has been appointed manager of distributor sales of Hewitt-Robins, Incorporated. He was formerly a regional sales manager and before that he was the company's advertising manager. In the past year he has specialized in the promotion of sales of Hewitt-Robins rubber products to the petroleum industry.

Diamond Iron Works division Goodman Manufacturing Company has recently appointed Dukehart-Hughes Tractor & Equipment Company, Inc., Des Moines, Iowa, as distributor for the complete line of Diamond products in central and eastern Iowa.

CHARLES F. PEKOR JR., executive vice-president and general manager of Pekor Iron Works, Incorporated, Columbus, Ga., died recently at the age of 71.

a product of and for TODAY'S TECHNOLOGY

ALMASOL 1225

BEARING AND CHASSIS LUBRICANT

CUSTOM-ENGINEERED to withstand

- WASH-OUT
- POUND-OUT
- MELT-OUT

ALMASOL 1225 keeps working when "ordinary" gun lubricants break down and allow costly metal-to-metal contact, rapid wear, galling and seizing!

ALMASOL 1225 combines the finest available paraffin-base oils, refined to maintain the highest degree of lubricity, superior adhesive properties and resistance to oxidation, and **ALMASOL**, a specially refined additive possessing tremendous load-carrying ability, resistance to all types of acid wear, under high temperature conditions **without change** in these vital characteristics!

Lubricants that were barely adequate in 1957 cannot be expected to do the jobs demanded of today's equipment. Protect your investment with **ALMASOL 1225!**

Used extensively on all types of construction equipment, trucks, industrial and farm machinery, **ALMASOL 1225** saves money for thousands of owners and operators. We would welcome the opportunity of furnishing **you** with more complete information.

Informative Booklet Available

WRITE, WIRE OR PHONE DEPT. PQ-3.

LE LUBRICATION ENGINEERS INC.
Fort Worth 11, Texas
Custom Built Lubricants for Heavy Equipment

NAME_____
FIRM_____
ADDRESS_____
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NEW ML-309 LOADER IS 'WAY OUT FRONT

ML-309 Moto-Loader—18,000 lb. lift capacity, equipped with 3 cu. yd. bucket.

New Moto-Loader has greater reach . . . greater dump height than any machine in its class

Maximum dump height of 10′ and a forward reach at maximum dump height of 3′6″ puts the new Lorain ML-309 'way out front of all the other loaders in its class, in these important ranges. And, it is here, where the work is done, that the "309" pays off, lets you load the biggest, highest trucks fast and efficiently for maximum profit.

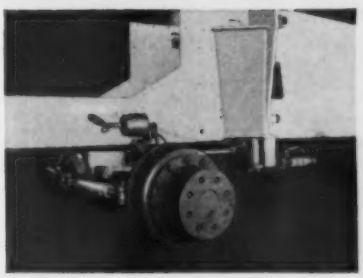
The "309" is 'way out front too in Lorain's 3-way balance—of power, weight, and control—for smooth, fast cycles. And it's 'way out front in a long list of design and construction features that owner and operator alike recognize as making it easier for them to get the job done.

See your Lorain Moto-Loader distributor for all the facts and an on-the-job demonstration. Then the "309" will be 'way out front with you too.

'WAY OUT FRONT IN CONTROLS—"No-hands" direction control frees operator's hands at all times for steering and other operations. Operator just moves his left foot from one to the other of two adjacent pedals to move the ML-309 forward or backward and to control speed of travel.

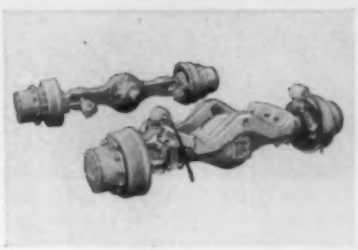
'WAY OUT FRONT IN SAFETY—New "safety" arms give operator better all-round vision at all times . . . protect him against hazardous "scissors" action. The exclusive "S" shaped arms absorb digging shocks and deflections, provide maximum ranges.

'WAY OUT FRONT IN BUCKET ACTION—New bucket design assures full loads even in the back corners. The load crown is near the center for dribble-free carrying. Bucket is made of heavy Cor-Ten steel, with a long, extra thick, wrap-around lip with a double cutting edge.



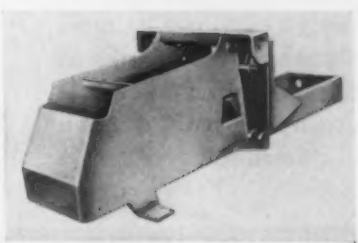
'WAY OUT FRONT WITH 4-SPEED MOTO-MATIC—Quick shifting at full power . . . starting and accelerating heavy loads—it's easy with the "309's" torque converter and 4-speed, full power shift Moto-Matic transmission. Automatic de-clutch permits "inching" the load.

'WAY OUT FRONT IN EASY STEERING—Power steering means easier maneuvering . . . less tiresome, time-consuming jockeying. Twin hydraulic power booster cylinders give smoother control, better roadability at high speeds. Automatic, stand-by mechanical steering controls are also provided.



'WAY OUT FRONT IN TRACTION—High traction differential axles deliver 4-wheel planetary drive. Steering rear axle is saddle-mounted for 23° of vertical articulation, assures positive traction. For highway travel, this axle may be de-clutched for 2-wheel drive.

'WAY OUT FRONT IN STRENGTH—Heavy-duty one-piece frame withstands impact shocks, stresses and strains. This rugged one-piece weldment of heavy steel plate holds all machine components in alignment. The most rugged going can't deflect, twist or knock out the ML-309.



THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN®
ON THE MOVE

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 11,000-lb. to 18,000-lb. lifting capacity.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

The unique parallelogram design of Allis-Chalmers rippers keeps shanks at the most effective angle . . . up . . . halfway down . . . down full depth.

TOUGH TOOLS MATCH TOUGH JOB POWER

Allis-Chalmers rear-mounted rippers maintain most effective penetration angle at all depths . . . up front, specially designed bulldozers make most of HD-21's tremendous power.

Modern tractor power, *plus* modern ripper and dozer design, is making a big difference on today's tough jobs. With the HD-21 and ripper, for instance, up to 60,000 pounds of drawbar pull let you rip 'n' doze what you once shot and shoveled . . . puts one man, one modern machine in place of a typical 4-man blasting operation.

Allis-Chalmers leads the field in making rippers practical and effective for these tough jobs. The introduction of *parallelogram design* — unique Allis-Chalmers feature on these big HD-21 rippers — keeps shanks at most effective penetration angle *at all depths.* You get the *same* effective tooth angle *. . . up . . . halfway down . . . or working a full two feet deep!*

In addition, Allis-Chalmers dozer design utilizes the latest developments in steel to produce durability which makes the most of today's big tractor power without profit-killing maintenance and repair. Trunnions, "C" frames, struts and moldboards match the HD-21's brute strength. If you're bidding or working *any* tough materials, your Allis-Chalmers dealer will furnish all the facts on successful ripper/dozer application. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.

move ahead with

ALLIS-CHALMERS

power for a growing world

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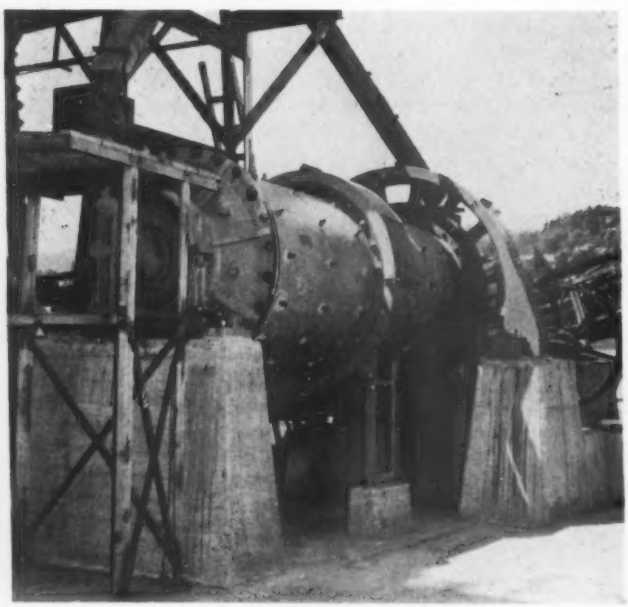
How small sand producers can beat the competitive squeeze with MARCY MILLS

Specification sands for most of the large government dams throughout the world have been produced by use of Marcy Center Peripheral Discharge Rod Mills. Also, large commercial sand producers have, for many years, used Marcy Mills to make a better product and increase their profits.



Here's how small producers can profitably use Marcy Mills...

- **Make a profit out of waste material.** By grinding waste pea gravel you not only make an additional profit from waste material, but also eliminate a stockpiling problem.

- **Increase sales by making a better product.** Grinding, compared with crushing, makes a more uniform, cubical product which makes better concrete...thus, gives you an opportunity to increase sales, by having a better product.

- **Increase markets by meeting a wider variety of specifications.** Marcy Mills provide a flexibility which permits changing the gradation of finished product to meet a wide variety of specifications.

Capacities from 2 to 200 dry tons per hour.

For complete details, write to

Manufacturing Division

MINE AND SMELTER SUPPLY CO.

DENVER 16	NEW YORK 17	SALT LAKE CITY 1	EL PASO	ALBUQUERQUE
3800 RACE ST.	122 E. 42nd ST.	121 W. 2nd S.	1515 11TH AVE.	701 HAINES N.W.

Licensed Manufacturers and Sales Agents in Canada, Australia, Sweden, England, South Africa
Sales Agents in Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the United States.

The Company that cares enough to give you the best!

EUGENE M. RUTT has been appointed general sales manager of the Rankin Manufacturing Company, Alhambra, Calif., maker of hard-facing welding rods and automatic wire products. He has been with the Rankin organization for the past 9 years, serving as district representative in the far west and in western Canada.

E. M. Rutt

W. L. Kubik

The retirement of WESLEY L. KUBIK, vice-president manufacturing for Athey Products Corporation has been announced. Mr. Kubik joined Athey Products Corporation in 1946 and was elected to his present position in 1947.

Prior to his association with Athey he was vice-president of manufacturing and engineering for the Superior Coach Corporation, Lima, Ohio. Mr. Kubik also spent 15 years with International Harvester, ultimately acting as assistant plant manager of the Springfield, Ohio, Works, and assistant plant manager at the Chicago Tractor Works.

Peabody Engineering Corporation of New York City and Stamford, Conn., has announced the appointment of JOHN DUNN as manager of Marketing and Technical Services Division. The newly formed division that Mr. Dunn—a veteran of 25 years with the company—will administer, comprises the engineering, service and sales departments, and also includes research and development, new products design, technical writing, public relations, promotion and advertising.

The company reports this consolidation under a single responsibility was brought about by the broadened scope of Peabody operations in many new and highly specialized fields in this country and abroad.

AUTOMATED
Hydral-60
PINCH VALVE SYSTEMS

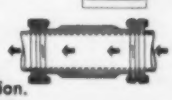
Controlled circuitry for any operating requirements

- The Massco-Grigsby Hydral-60 System consists of one or more pinch valves with a single automatically operated hydraulic pump.
- Hydraulic pump may be operated by electric motor or by air from normal plant supply system.
- Valves may be the same or different size.
- Valves in the system may be operated simultaneously or independently.
- Control valve may be manual or solenoid.
- Valves are self-supporting and may be operated in any position from horizontal to vertical.
- Valves may be coordinated and interlocked with other plant equipment to automatically control tank levels, rate of flow, etc.
- Valves may be independently controlled for normal or rapid closure.
- Valves may be held fully open, fully closed, or at intermediate positions.
- Remote control to meet individual requirements.
- Controls may be included for automatic emergency operation.
- 3" to 14" I.D. sizes, with 50, 100, and 150 psi line pressure ratings.
- Temperatures to 200° F.

Advantages of Massco-Grigsby Pinch Valves

- Rubber, neoprene and special compounded rubber sleeves *for corrosive and abrasive pulps and liquids.*
- Patented "hinged" sleeve. Recesses serve as "hinges" during compression; reduce strain and permit tight closing.

- Unobstructed flow eliminates high friction loss and prevents contamination.



- Split flanges and patented Flex Seal ends assure perfect seal.
- Rugged, heavy duty construction for most severe service and long life.
- Cannot leak or stick.
- No working parts in contact with pulp or liquid; no packing glands.

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MINE AND SMELTER SUPPLY CO.

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LICENSED MANUFACTURERS AND SALES AGENTS in Canada, Australia, Sweden, England, South Africa
Sales Agents in Mexico, Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the U. S.

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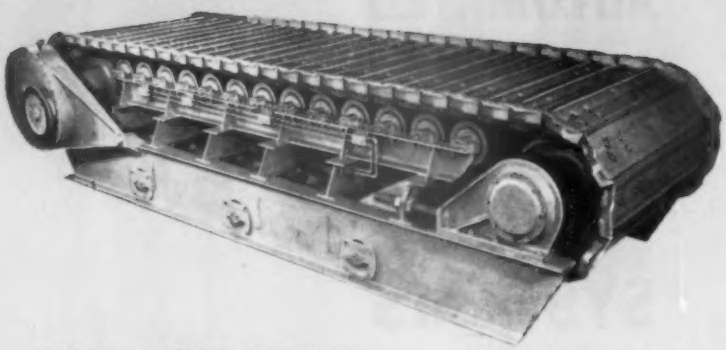
LONG LASTING DEPENDABILITY



NICO

APRON FEEDERS

FD-4 and FD-8

FOR EXTRA HEAVY DUTY USE

- Uses Mass Produced Standard Crawler Tractor Parts
- Short Pitch, 8" on FD-8, 6-¾" on FD-4, provides more even feed.
- Decks of Cast Manganese or Formed Alloy Steel
- Larger Diameter Head and Tail Shafts
- Anti-Friction Self-Aligning Bearings
- Centralized Lubrication Available
- Uses NICO Shaft Mounted Reducer . . . Eliminates open gearing and lubrication problems

Write for Illustrated Brochures

NICO

NATIONAL IRON COMPANY

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Subsidiary of Pettibone Mulliken Corporation, Chicago 51, Illinois

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Profitable MATERIAL HANDLING *with* EHRSAM

BELT CONVEYOR

The Ehrsam line of Conveyor Rolls fills a definite demand for a conveyor that will combine dependable high performance with low maintenance cost for maximum profit. Ehrsam Conveyor Rolls are available in any belt widths with many styles and heights. For additional information write Department B for your catalog 2-A.

TRIPPERS

The Ehrsam Tripper is designed for top performance. It is easily serviced. Most working parts are accessible, yet protected for the operator's safety. All spouting is engineered to give full capacity discharge. Many styles of trippers are available, and can be designed to suit your special application.

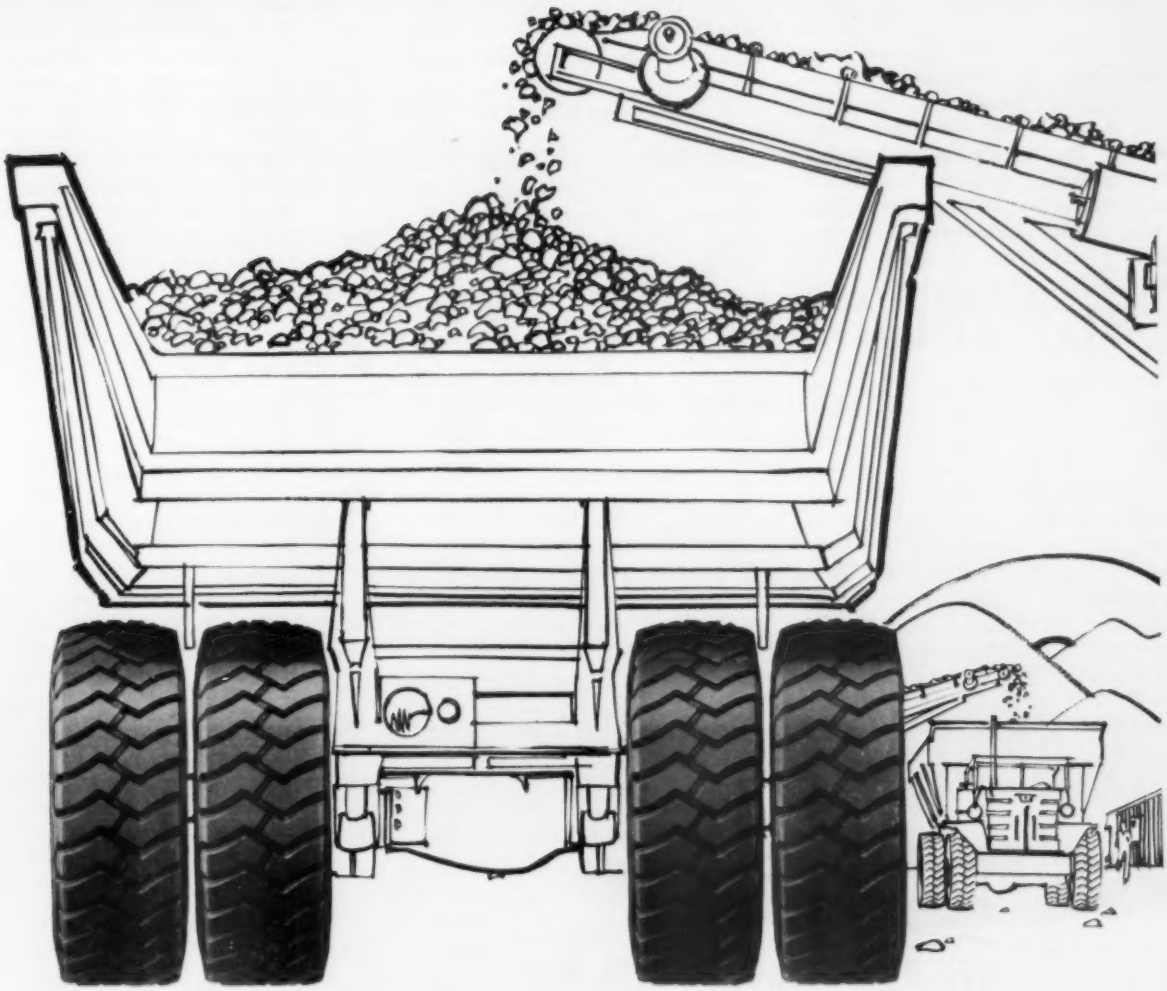
The J. B. Ehrsam and Sons Mfg. Co.

Enterprise, Kansas

SALES OFFICES:

KANSAS CITY, KANSAS
PHOENIX, ARIZONA
CHICAGO, ILLINOIS
SAN FRANCISCO, CALIFORNIA
HASTINGS, NEBRASKA
FORT WORTH, TEXAS
GOLDEN, COLORADO

Enter 166-B on card, page 207



Shock-Fortified Firestones

KEEP LOADING SCHEDULES ON TIME!

You know how hard quarry hauling can be on tires. To keep your equipment busy, you need tires that can take tough day-in, day-out use. You need tires with staying power—Firestone tires. Firestones match any job, no matter how tough. Firestone Rubber-X, the longest-wearing rubber ever used in Firestone tires, is specially compounded to resist rock and shale cuts. And the Firestone Shock-Fortified Nylon cord body soaks up one wallop after another—and keeps on running. For tires that last longer—and are backed by swift, on-the-job service—see your Firestone Dealer or Store today. **Always Specify Firestone Tires When Ordering New Equipment.**

Tune in Eyewitness to History every Friday evening, CBS Television Network

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1961, The Firestone Tire & Rubber Company

ROBERT J. URLAKIS, a 19-year veteran of the company, has been appointed sales representative, large machines, by Bucyrus-Erie Company, South Milwaukee, Wis. He will work out of the firm's Pittsburgh, Pa. sub-regional office and will implement sales and service for a complete line of large excavating and drilling equipment, including quarry and mine excavators, walking draglines, stripping shovels, and rotary blast-hole drills.

The appointment of JAMES D. MORAN as assistant to the president of The Flintkote Company has been announced. He will make his headquarters at the company's executive offices in New York. Mr. Moran will continue to direct the activities of The Sealzit Company, a Flintkote subsidiary whose plant is located at Riverside, Calif. He is vice-president and general manager of Sealzit, a position he was named to in May, 1960, following acquisition of The Sealzit Company by Flintkote.

SKF Industries, Inc., manufacturers of ball and roller bearings, held a western regional sales meeting recently in Redondo Beach, Calif. The entire sales force from the Denver, Los Angeles, San Francisco, Portland, and Seattle areas was in attendance, as well as top executive sales personnel from the company's Philadelphia office.

Principal speakers, who came from Philadelphia to the three day program were S. H. SMITH, vice-president in charge of sales; J. H. SUTHERLAND, director of sales; D. B. EDEN, director of replacement sales; and F. WHITE, advertising manager.

GERRY N. RICHARDS has been named sales and service manager for pneumatic bulk handling systems and trailers sold by Halliburton Company in the western states. He is a Halliburton veteran with nearly 15 years experience in designing, building, and operating the company's pneumatic bulk handling systems.

WILLIAM S. LOWE, president of the A. P. Green Fire Brick Company, has announced the appointment of J. JAMES OFFUTT as vice-president and general manager of the company. In his new capacity, Mr. Offutt will be responsible for the direction of all manufacturing, sales, research, and engineering of the A. P. Green organization.

M. D. MCCLAIN, assistant vice-president, has been appointed assistant to the general manager. He will maintain his headquarters at the Woodbridge, N. J. office of the company.

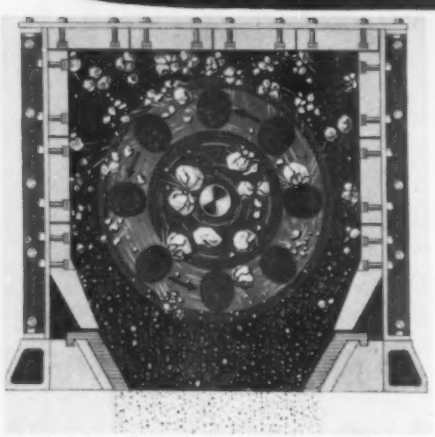
The appointments of JACK W. SWATEK as director of sales, and of H. L. BEYNON as general sales manager have also been announced. Mr. Swatek will be in charge of the administration of the over-all sales policies of the Green Company. He has been general sales manager of the company since 1955.

As general sales manager, Mr. Beynon will head up all of the active sales functions of the Green Company through its direct sales representatives, distributors, dealers, and foreign representatives. Prior to his current appointment, Mr. Beynon was assistant general sales manager.

SIZE AND UPGRADE YOUR

WET OR DRY AGGREGATES FOR

BOTH CONCRETE and BITUMINOUS MIX with



STEDMAN CAGE MILL

The Stedman Single-Cage Mill reduces Gravel and Stone, either wet or dry, via the Internal-Impact Principle. See cut at left. It pulverizes unsound material to be passed off with fines—the discharged product going to wet screens, log washer, jigs, or heavy media process.

The Stedman Single-Cage Mill not only upgrades your product, but also gives the greatest percent of crushed surfaces for Black Top Mix. Example: "Crush your -2" plus ¼" including pea gravel to a product of ¾" X O, screen out minus ¼" sand and furnish a specification product for Bituminous Mix with 65 to 100% crushed particles."

Write for information on New Design Multiple Cage Mills for producing AG-LIME featuring High Capacities, Low Maintenance.

STEDMAN

FOUNDRY AND MACHINE COMPANY, INC.

Subsidiary of United Engineering and Foundry Company, Aurora, Indiana, U.S.A.

Enter 168 on card, page 207

Pennsylvania Crusher Division of Bath Iron Works Corp., West Chester, Pa., has announced the appointment of Ottus Construction Equipment, Inc., 17th and Wallace Sts., Erie, Pa., as a new representative.

Ottus will represent Pennsylvania on their line of Kue Ken jaw and gyratory crushers and fine reduction impactors. They will cover the counties of Erie, Warren, McKean, Forrest, Elk, Crawford, Mercer, Venango, and Cameron in Western Pennsylvania.

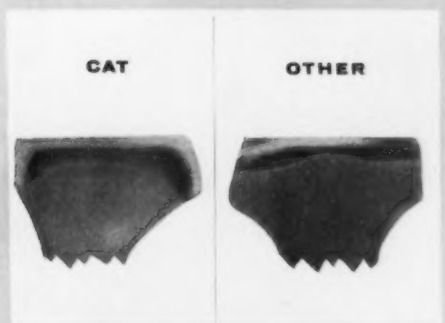
Hewitt-Robins, Incorporated has acquired the assets of the Union Chain and Manufacturing Company, Sandusky, Ohio, for 51,250 shares of Hewitt-Robins common stock. Union Chain produces conveyor and power transmission chain and sprockets. E. F. EMMONS, former president of Union Chain, will be president of the Union Chain Division of Hewitt-Robins.

Special Report to Users of Caterpillar Equipment:

WHAT YOU DON'T SEE CAN HURT YOU

You can buy a lot of parts that *look* like genuine Caterpillar parts. Some may be cheaper initially. But they are as different as night and day when you get them in service.

Take these links, for example. They all *looked* identical when new. But see what has happened after 2000 hours on the same D8 Tractor! The two links in the center, a popular brand with induction-hardened rails, cost about 9% less than Caterpillar links originally, but showed about 50% more wear.



The extra service you can expect from the Cat links can be seen and compared with other brands. Here are actual photos of etched cross sections of *production* links made by Caterpillar and the other manufacturer. The light areas at top show case depth and pattern of wear-resistant rail material resulting from heat treatment. See the deep, uniform wear case on top *and sides* of the Cat part? It's as hard as a good ball-peen hammer head. But in the other brand, the wear case varies both in depth and hardness . . . that's the reason why after 2000 hours on a D8 the Cat-made links had worn 50% less.

Investigate and you will find superiorities for every undercarriage component built by Caterpillar. This extra quality—though it sometimes costs a little more initially—pays off by delivering *extra* trouble-free working hours. That's why genuine Caterpillar parts cost you less per hour than other brands.

And when it's time to replace or rebuild your tractor undercarriage, see your Caterpillar Dealer. He is an undercarriage specialist with modern facilities to back him up. Get the full story on his many money-saving options and recommendations *tailored to your job conditions.* Truly CUSTOM TRACK SERVICE, designed to save you money . . . and offered only by your Caterpillar Dealer.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NOW! A practical, trunnion-drive ball mill

To all of the superior features of the KENNEDY Ball Tube Mill is now added the finest of mill drives.

This new KENNEDY Mill features:

A clean in-line drive arrangement—the first *practical, factory-sealed, symmetrical* drive—cuts field erection cost; shortens field erection time; Horsepowers up to 3300. Trunnion bearings of the most advanced design—self-aligning with water and oil-cooled non-scoring bronze alloy liners; sizes are generous for lowest bearing pressures.

Heavy duty mill shell—stress relieved after fabrication; flanges machined simultaneously.

Proven performance in actual service—a remarkable record of consistent greater-than-rated capacity performance on grinding of clinker at a prominent cement plant.

For your next mills, specify KENNEDY.

TRUNNION MASTER
MILL LUBRICATION SYSTEM

KENNEDY Mills feature an exclusive high-pressure, hydraulic lift for both starting and running. Bearing, oil and cooling water temperatures are indicated; excessive temperature sounds alarm or shuts down mill.

KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

Primary & Secondary Gyratory Crushers • Jaw Crushers • Roll Crushers • Impact Breakers • Hammer Mills • Rod & Ball Mills • Kilns & Kiln Accessories • Dryers • Scrubbers • Screens • Pneumatic & Mechanical Conveyors • Complete Crushing, Lime, Cement & Carbon Paste Plants. • Research & Testing Service.

C. C. Hand

M. L. Johnson

F. L. BLODGETT, general manager of the Hard Surfacing Division of Alloy Rods Company, announces the appointment of C. C. HAND and M. L. JOHNSON as district managers.

Mr. Hand will headquarter at the Company's branch office in Pittsburgh. Mr. Johnson will cover the Western states from the El Segundo, Calif. branch.

A new creative design service offered to customers by West Virginia Pulp and Paper Company makes it possible for multiwall bag users to achieve advertising impact for their products.

The creative service offered by the Multiwall Bag Division provides a fresh approach to printing, color, and layout, which is translated into a series of preliminary and finished designs—all without cost to the customer. The service will create entirely new designs or revise and modernize existing designs.

The company reports that a survey recently completed by their Multiwall Bag Division indicates that growing competition between industries, as intense as that in consumer markets, makes it imperative for industry to take full advantage of every opportunity to project the quality of a product and a progressive image of a company.

LOUIS S. GOLDBERG has been appointed director of marketing for the Buell Engineering Company, Inc., New York City. In this newly created position, Mr. Goldberg will coordinate the marketing, advertising and sales promotion programs for Buell and its Northern Blower Division in Cleveland, Ohio. He was formerly manager of marketing and advertising for the Onyx Chemical Corporation.

Phillippi Equipment Company, 2360 Highway 100 South, Minneapolis, Minn., has been appointed dealer for P&H construction and mining equipment manufactured by Harnischfeger Corporation. The new dealership will cover the southern half of Minnesota. For several years the firm also has been dealer for P&H equipment in the northern half of Minnesota under the name, "Phillippi Equipment Company of Duluth".

S. J. PHILLIPPI is president; A. S. HUHNERKOCK, general superintendent; KENNETH O. WISEMAN, service manager; and ROGER DEMARAIS, parts manager.

Construction has begun in Lincoln, R. I. on a new 400,000-sq. ft., single-story plant for Collyer Insulated Wire Company of Pawtucket. The new plant will consolidate operations now being carried on at four separate locations in Pawtucket and Central Falls, R. I. It is expected to be ready for occupancy early in 1962.

Union Bag—Camp Paper Corporation, has recently announced that DR. WILLIAM H. AIKEN joined the company in February as director of research and development.

His most recent post prior to joining the Union-Camp organization was as a director and vice-president, research and development engineering, of Personal Products Corporation, one of the Johnson & Johnson companies.

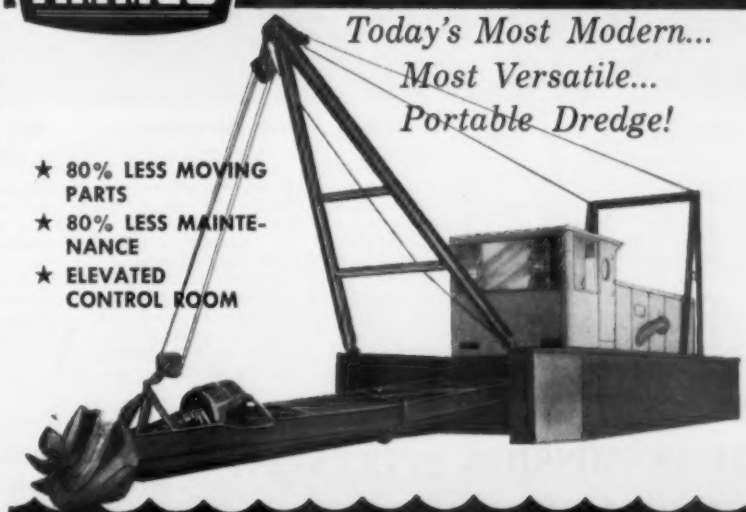
The Hulburt Oil & Grease Company has announced the promotion of HOWARD A. WALTERS to the position of sales manager. He previously was a district manager for Hulburt, serving the area of West Virginia, Virginia, Kentucky, Tennessee, Alabama, and Indiana.

Mr. Walters joined the Hulburt Oil & Grease Company in 1952 and now heads all national sales and field engineering projects for the company. He is a member of the American Society of Lubricating Engineers, and the American Institute of Mining Engineers.

AMMCO PORTABLE DREDGES

Today's Most Modern... Most Versatile... Portable Dredge!

★ 80% LESS MOVING PARTS
★ 80% LESS MAINTENANCE
★ ELEVATED CONTROL ROOM



★ ONE-MAN PUSHBUTTON CONTROL
★ POWERFUL HYDRAULIC DRIVES ON CUTTERHEAD AND WINCHES

AVAILABLE IN SIZES 8" TO 22"
MANUFACTURED IN THE UNITED STATES AND EUROPE

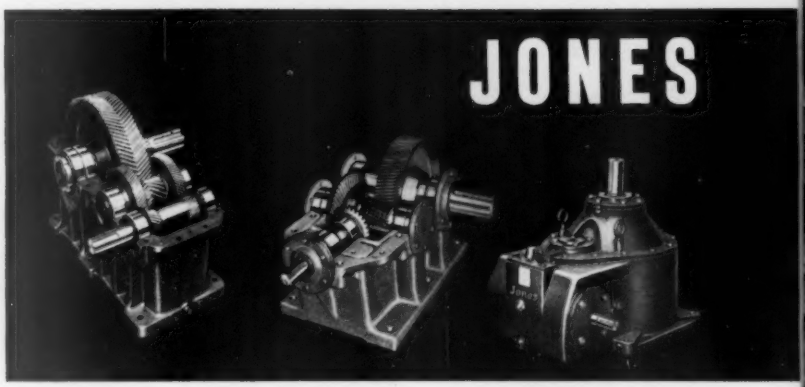
AMERICAN MARINE and MACHINE COMPANY
P.O. BOX 1150 ● PHONE AL 5-0709 ● NASHVILLE, TENNESSEE

Enter 171 on card, page 207

How

THE BROAD H-R LINE

can pinpoint your needs, save you time and give you off-the-shelf savings.



Jones herringbone reducers...

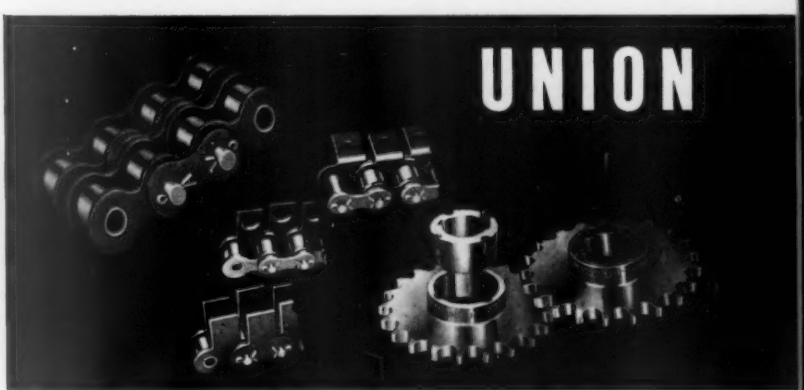
Ruggedness and reliability, known throughout industry. Widest selection of sizes and ratios. Balanced design, rugged housing, heavy-duty bearings mean efficient, trouble-free operation, and longer life. Capacities to 1,672 hp. *Bulletin J-100.*

Jones spiral bevel speed reducers...

Most-up-to-date design. Horizontal or vertical outputs. New, highly efficient right angle drives. Matched sets of high-hardness spiral bevel gearing, oversize bearings, alloy steel helical gearing. Capacities to 1,050 hp. *Bulletin J-25.*

Jones worm helical speed reducers...

Heavy duty service. Applicable to a wide range of vertical drive requirements where medium to high speed reduction ratios are needed. Available in low speed shaft extension up, down, and double extended. Capacities to 175 hp. *Bulletin J-14.*



Union ASA standard roller chain...

Over 98% efficient. Union ASA standard roller chain transmits more horsepower in less space than many other mechanisms. Available in outstanding range of pitches and widths, ASA standard and ASA heavy series, and extended pitch. *Bulletin RT-60.*

Roller chain attachments...

An almost unlimited variety of unusual drive and conveying problems can be solved with standard or special attachments by Union Chain. *Bulletin RT-60.*

Union roller chain sprockets...

Complete range of stock and special sprockets for all chain applications. Precision teeth, tough, durable body, proper tooth surface hardness make for long life and economy. Available also in Taper-Lock bushings. *Bulletin RT-60.*

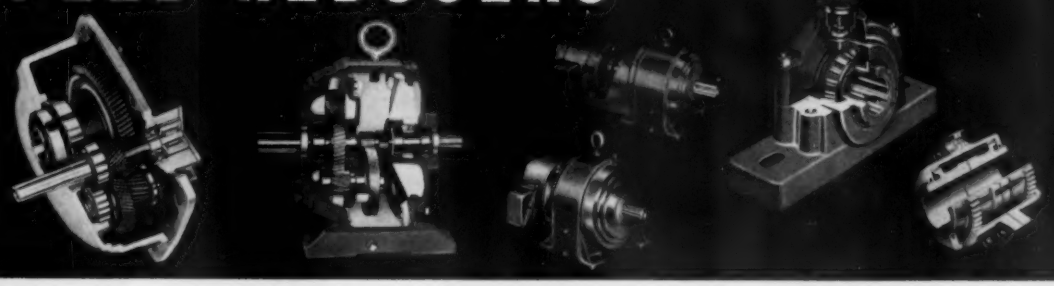
YOUR H-R POWER TRANSMISSION SPECIALIST CAN SHOW YOU HOW...

to select the ratio, capacity, and design closest to your needs . . . directly from H-R standard equipment . . . and at "off-the-shelf" savings.

Another point in your favor: your H-R power transmission specialist is in the best position to help you select the right drive. He can recommend without bias, because the H-R line is one of the most comprehensive in industry. Experienced in *all* phases of power transmission, he can be invaluable in helping you with your over-all drive problem. Important too, he has Hewitt-Robins service and reliability behind him!

Availability? H-R warehouses, sales offices, and stock-carrying distributors spread a strategic network from Coast to Coast. There is a team of H-R

SPEED REDUCERS



Jones shaft-mounted reducers...

Compact design for confined areas. High hardness gearing for long life. Double lip oil seals, anti-friction bearings, automatic overload mechanism, positive lubrication. Torque-arm for simple belt tensioning adjustment. Capacities to 40 hp. *Bulletin J-19.*

Jones in-line helical reducers...

Standardized components, both in-line and right angle reducers to meet any drive requirement. Easy-to-change ratios. One-piece, cast housing, positive gear and shaft alignment, reliable oil-sealing. Capacities to 147 hp. *Bulletin J-18.*

Jones gearmotors...

Horizontal or vertical, flange or foot-mounted. Two basic types: *All-motor* . . . has motor mounting bracket for foot-mounted motor. *Integral* . . . incorporates flange-type motor bolted directly to gearhead housing. *Bulletin J-17.*

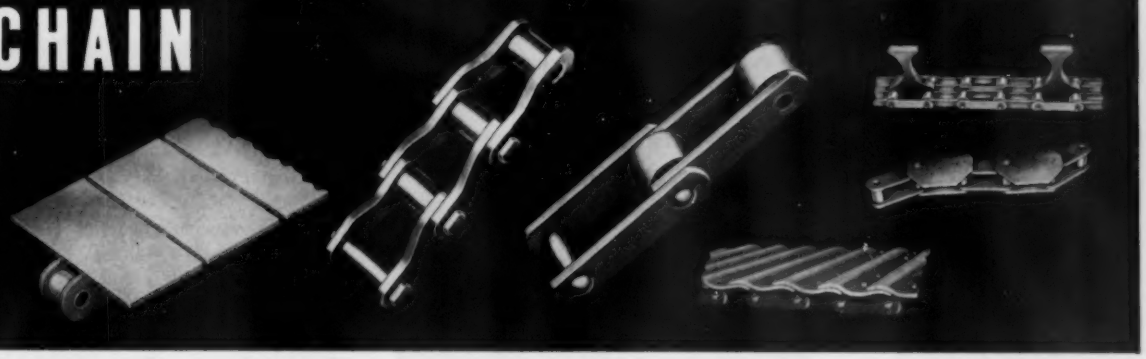
Jones power transmission components...

Pillow blocks for heavy-duty service. Timken tapered roller bearings, two-piece, cast iron housing, shaft sizes from 1 15/16" to 9". *Flexible couplings,* gear tooth, fabric disc . . . *V-belt drives . . . cut tooth gears . . . cast iron pulleys. Bulletins J-10A, J-16, J-23.*

Jones complete drive units...

Safe, efficient special drives, feeder tables, car pullers, door, boom, and skip hoists. Feature rugged reliability of Jones speed reducers. Standard lines available or modifications of existing equipment at considerable savings. *Bulletins J-11, J-22.*

CHAIN



Union ASA standard flat top roller chain...

Now available in Delrin, (as well as other materials) reduces breakage and eliminates corrosion problems in many food, beverage, and pharmaceutical conveyor applications. Available in many combinations of chain and materials. *Bulletin RT-60.*

Union HB steel drive chain...

At home in heavy duty service, such as cement mixers, cranes, shovels. Offset side-bar adds to flexibility. Hardened bearing for rugged wear. Pitches from 1.6" to 6.0". Average ultimate tensile as high as 420,000 psi! *Bulletin A-4.*

Union HB steel roller chain...

Low ultimate cost in all types of elevating and conveying duty. Hardened alloy steel bushings, uniform wearing surfaces, true pitch accuracy, tight fit of pins and bushings. *Bulletin A-4.*

Union apron conveyors...

Many types available. Union apron conveyors for bulk or packaged materials. *Bulletin A-4.*

Union "Made-to-order" chain...

Meet unusual requirements. Union Chain Division of Hewitt-Robins, unlike many manufacturers, is able to design and produce special chains to meet special needs. *Bulletin A-4.*

power transmission specialists in your territory. To put them to work for you, just give your nearest Hewitt-Robins Sales Office a call.

HR HEWITT-ROBINS

CONVEYOR MACHINERY AND BELTING • HOSE
POWER TRANSMISSION • VIBRATING EQUIPMENT
ENGINEERING SERVICES

WRITE FOR TECHNICAL BULLETINS

HEWITT-ROBINS
DEPT. 3-24, STAMFORD, CONNECTICUT

Gentlemen:
Please send me the following bulletins:

☐ J-10A ☐ J-11 J-22 ☐ J-14 ☐ J-16 J-23 ☐ J-17 ☐ J-18 ☐ J-19 ☐ J-25 ☐ J-100 ☐ RT-60 ☐ A-4

Signed_____ Title_____

Company_____

Address_____

Cummins Engine Company, Incorporated, Columbus, Ind., has announced plans for a $1,700,000 addition to its manufacturing facilities. Construction on the building which will house all engine assembly functions is scheduled for completion by August, 1961.

The new facilities will provide 101,600 sq. ft. of additional floor space, increasing the total building area at the Columbus, Ind. site to over 1,000,000 sq. ft.

This is the second major building expansion by the Cummins firm at its Columbus, Ind. plant during the past two years. The company completed construction of a $5,500,000 engine test and shipping area in July, 1960. That 300,000-sq. ft. addition, which also includes a heating plant and a parts storage area, is the largest single building at the present site.

Broadened usefulness for internal combustion engines is the goal of the newly organized National Engine Use Council, composed of suppliers of engines, accessories, and fuels. The advisory and organizational committee of the group headed by C. W. JOHNSON, vice-president of Continental Motors Corp., met in Phoenix, Ariz., recently to formulate operating plans.

The Council, Mr. Johnson said, hopes to achieve its objectives through a many-sided program including improvements in engines and in the service backing them up, and education of power users, by means of national and local sales promotion, on the advantages of internal combustion in a wide range of prime mover applications.

GLENN LOGAN MOLL has been appointed sales engineer representing The DAY Sales Company, Minneapolis, Minn. He will serve DAY customers and prospects in the Cincinati, Ohio area. Mr. Moll's previous experience includes engineering sales for Bosland Industrial Sales, and O. M. Scott and Sons. He was a dust collection project engineer for Scott's chemical division in Marysville, Ohio.

LEWIS C. BLACK, vice-president in charge of sales for Bucyrus-Erie Company, was recently elected president of the Power Crane and Shovel Association. A member of the association's board of directors last year, Mr. Black will serve the PC&SA post for one year. The PC&SA is a national organization, representing the manufacturers of power cranes and excavators.

L. C. Black

B. H. Puerner

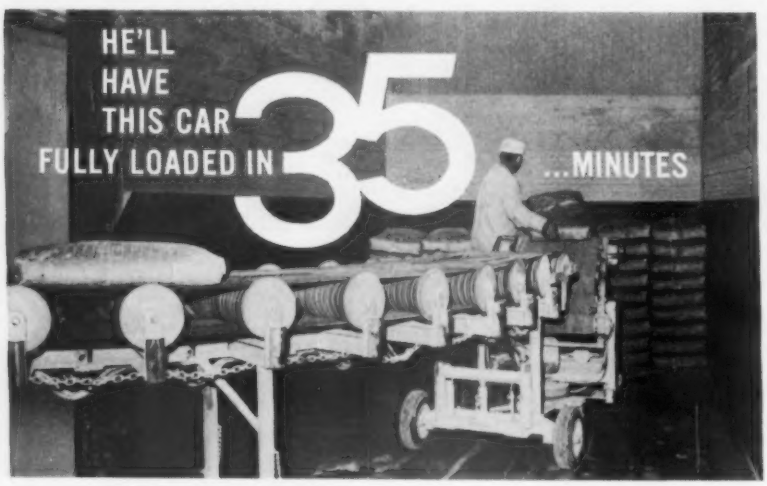
Retirement January 31st of BERT H. PUERNER after more than 40 years of service has been announced by Allis-Chalmers Manufacturing Company.

A 1920 graduate mechanical engineer of the University of Wisconsin, Mr. Puerner has long been associated with pyro-processing machinery activities at Allis-Chalmers, specializing in the design and sale of cement plants. For the last three years, he was manager of special projects for Allis-Chalmers International.

Mr. Puerner holds several cement making machinery patents and has presented papers before various engineering societies. He is affiliated with the Milwaukee Engineers' Society and the American Institute of Mining, Metallurgical & Petroleum Engineers.

New representative for Columbia Steel Casting Company, Inc., in the intermountain district, with headquarters at Denver, is B. B. BRADISH. Mr. Bradish, who for the past five years has been self employed as a consulting engineer to the mining and petroleum industries, is a professional Geological engineer.

For 15 years he served with Standard Oil Company of New Jersey and Skelly Oil Company, obtaining the position of senior staff member with Standard of New Jersey's South American subsidiary, Tropical Oil Company.



...without help, using a
POWER-CURVE Loader

Bag loading costs of eight cents a ton are not uncommon in plants using Power-Curve equipment. One man loads and stacks direct from the packer with no need to lift a single bag. Loads can be palletized or stacked in any pattern, also put into warehouse storage.

There are Power-Curve installations near you. Let us show you how your plant can benefit from a custom engineered Power-Curve loading operation.

Literature and engineering details sent on request.

POWER-CURVE
CONVEYOR COMPANY
2185 SOUTH JASON ST., DENVER 23, COLORADO

Enter 174 on card, page 207

F. J. Brown

F. A. Olmstead

The Upson-Walton Company has appointed FRANK J. BROWN as sales representative for the mid-central states. Mr. Brown, who resides in Bonner Springs, Kans., will promote the sale of all wire rope, tackle blocks, rope fittings, and crane hook blocks manufactured by Upson-Walton, in the states of Kansas, Missouri, and Nebraska.

The company also announced the promotion of F. A. OLMSTEAD to the position of manager of sales promotion and advertising. He has been associated with Upson-Walton for six years as a sales representative in the New York, Pittsburgh, and Cleveland districts.

The assets of the Nice Ball Bearing Company, a division of Channing Corporation, have been acquired by SKF Industries, Inc. for an undisclosed sum, according to an announcement by GEORGE CARLETON JR., president of Nice.

Nice will continue to operate as an independent organization maintaining personnel and policies. The company employs about 800 persons and has plants located in Philadelphia, and Lansdale, Pa.

George Carlton Jr. will continue as a director and executive-committee member at Channing Corporation.

At its regular quarterly meeting, the Board of Directors of Dorr-Oliver Incorporated, Stamford, Conn., elected WILLIAM L. OLIVER, chairman of the board. Mr. Oliver has been vice-chairman of the board since 1956, and also serves as general counsel for the corporation. He is a partner in the law firm of Hall, Henry, Oliver & McReavy, in San Francisco, Calif.

GORDON M. ROBB, manager of the Bemis Bro. Bag Company plant and sales division in Houston, Texas, was recently transferred to Peoria, Ill.

On January 31, 1961, when L. J. FINN retires after close to a half century of service with Bemis, Mr. Robb will take his place as manager of the Peoria plant and paper mill.

Mr. Robb joined Bemis 43 years ago as an office boy in Houston. Serving in positions of increasing responsibility through the years while continuing his education at night, he became sales manager of the Houston division in 1943, and manager of the Houston plant and sales division in 1951.

WAYNE T. MARSHALL has been named manager of sales service for The Babcock & Wilcox Company's Refractories division. Mr. Marshall, who has been with the B&W Company since 1937, is in charge of the general office sales group located at the company's refractories plant in Augusta, Ga.

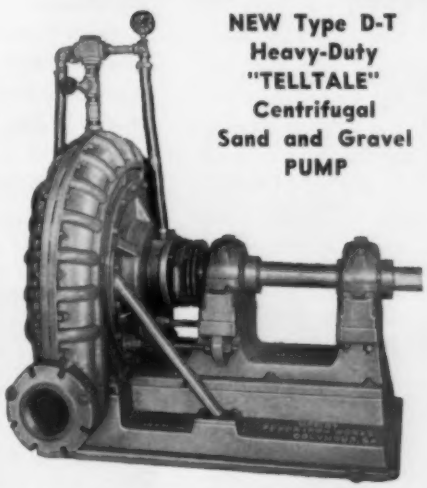
Cooper Equipment Company, 8723 Broadway, San Antonio, Texas, has been appointed a distributor for southern Texas by Koehring Company of California, Stockton. Cooper Equipment had been appointed distributor for three other Koehring Company Divisions earlier this year: C. S. Johnson, Koehring Division, and the Parsons Company.

The new distributor will now sell and service KO-CAL products, which include Pitloaders, Roughloaders, Asphalt Paver Feeders, Windrow Sizers and water haulers.

ROBERT COOPER is president of the firm.

ARTHUR C. DAMAN JR. has recently returned to Denver, Colo. from Lima, Peru, where he organized and managed Denver Equipment Company (Peru) S. A. for the past three years. In his new assignment he will be attached to the International Sales Division headquartered in Denver. He will be responsible for all sales activities in Mexico, Central America, and South America.

QUICK-CHANGE "ARTISTS" LOVE THAT "TELLTALE" PUMP



NEW Type D-T Heavy-Duty "TELLTALE" Centrifugal Sand and Gravel PUMP

CHANGING TIME, depending on the man: 6" impeller, 1 to 1½ hours; 8", 2½ to 3 hours. —6" impeller, shell liner and both faceplate liners, 2½ to 3½ hours; 8", 5 to 8 hours. It's the simple, foolproof assembly that is "Telltale's" own.

AS LOW IN DOWNTIME AS IT IS HIGH IN PRODUCTION

"Telltale" is the only pump that warns when it's time to reline. Air sucked through periphery ports causes pump to lose its prime. Pumping stops. Water leaking through the ports signals that the shell liner and the surrounding belt of packing have worn through.

Available with either tough semi-steel or best-in-the-long-run Ni-Hard wearing parts in 4", 6", 8", 6 x 8" suction and 8 x 10" suction. Now available also in either alloy, 45 and 90° extra-heavy long-radius flanged elbows. Write for Type D-T Heavy-Duty folder and prices.

PEKOR IRON WORKS, INC.

ESTABLISHED 1892

LOCK DRAWER 909 FAIRFAX 2-4020 COLUMBUS, GEORGIA

Enter 175 on card, page 207

From a profit-minded Wisconsin gravel producer—

6 unusual money making ideas

***Unusual** proven ideas, you might say. For Wesley Peterson, owner, Gillett Cement Products, Gillett, Wisconsin, has been working on them and refining them, proving and improving them ever since the war.*

Michigan Tractor Shovels dig pit-run, eliminate blasting

Let's take his pit operation first. Three good ideas here. Michigan *digging power* accounts for two of them. Both the company's 4-year-old Model 125A and their two newer Model 175A's have the breakout force *to eliminate blasting*. Rarely, in fact, need a machine use non-loading passes to loosen the gravel material. Three scoops of a 2¼ yd Model 175A bucket heaps a 10 yd hauler. Time, 1½ minutes. The 2¼ yd Model 125A needs only four scoops, 2 minutes.

Strip rocky clay overburden

The Michigans also strip overburden. Part of this is *bucket-dozed* over a bank, part is picked up and carried. Carrying constitutes a major production advantage where any distance is involved, according to Mr. Peterson, and is one of the reasons he prefers a Michigan Tractor Shovel over a dozer for this work. Speed is another reason . . . for example, on one recent job, one Michigan stripped an acre, *up to 12 ft deep*, in three days!

Truckers load own trucks

Another major saving has been instituted by Mr. Peterson at his portable crusher. When there's lots of work to be

done here, Mr. Peterson details one of his 14 employees as Michigan operator. *But usually, the machine is operated by each individual truck driver as he comes into the pit for a load.* "Michigans, with their power steer, power shift (no clutch) and torque converter, are easy for almost anyone to run well," says Peterson. His third Michigan is stationed at the material yard where it loads customer and company trucks, hauls sand for ready-mix, dresses stockpiles, etc. Letting each driver handle his own load may slow production slightly at peak periods . . . *but* the specialized operators normally needed—and, as Mr. Peterson points out, *definitely required* on a crawler-loader or crane—can be assigned other work.

Do spare-time jobs for extra profits

Michigan speed and flexibility have given Mr. Peterson another big advantage. To fill slack periods, even of only

a few hours, the company actively solicits local businessmen, farmers and towns for those small jobs that build extra profits. Charges return a good income to the owner, yet are reasonable to the buyer. Including travel time and operator, Mr. Peterson gets $15 per hour for either his gas-operated 127 hp Model 125A Michigan or his 133 hp diesel-powered 175A—$18 per hour for his newer, more powerful 162 hp turbo-diesel 175A.

Dig basements

Probably the most-frequent "custom job" is digging basements. "In our part of the country, with material varying from hard clay to sand, Michigans are ideal for this work," says Owner Peterson. Typical basement—30 x 40 x 6 ft. deep—takes 3 to 5 hours. This includes time to strip and pile topsoil, also to carry and spread excess material in low spots (if any). Michigan leaves neatly-finished sides, say contractor renters. Little hand work is needed.

Remove trees, stumps

Another interesting—and unusual—Michigan job has been clearing land. To reach one such task, on the hospital grounds in Oconto Falls, 10 miles away, took the self-powered Michigan less than 30 minutes. At work, the Michigan cleared brush, dug out stumps, even pushed over trees. Where trees are no larger than they were here, 1½ ft in diameter, operator simply raises bucket, rests it 8 to 9 ft up on the trunk, and moves forward. Four-wheel-drive topples the tree quickly, root ball and all. On other jobs,

such as one in the town of Gillett where trees averaged 3 ft and more in diameter, the versatile Michigan digs around the root, *then* pushes the trees over.

Plow, remove snow

Even in the severe winters of northern Wisconsin, Mr. Peterson keeps his Michigans working. He has, for example a contract with the City of Gillett for removing snow from the main street of this community of 1,500 people. Other times, the Michigans plow parking lots and farm driveways. Standard bucket equipment is currently being used on all three units, but Mr. Peterson is investigating purchase of the quick-detach "Wisconsin Special" one-way and V-type snow plows recently made available for Michigans . . . also a larger bucket for loading snow (many choices, from 3 cubic yards up, are available through his Michigan Distributor, Aring Equipment Company). Other quick-detach attachments are available too: snow-blowers, crane hooks, fork lifts, street sweepers, backfiller blades, root rakes, etc.

Michigan is a registered trademark of

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 13, Michigan
In Canada: Canadian Clark, Ltd.
St. Thomas, Ontario

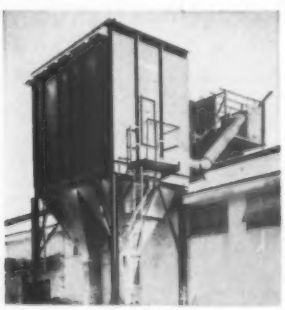
Enter 176 on card, page 207

550° F gas filtered by Glastube collector at Perlite mfg. plant

A demonstration of WHEELABRATOR'S

VITAL VALUES

Development of a residential neighborhood near an Eastern perlite manufacturing plant, meant the firm could no longer exhaust fine perlite dust into the air. With temperatures of 550°F involved, only a dust collector utilizing glass fiber tubes would handle the problem. To this challenge Wheelabrator engineers brought the Vital Experience of having used successfully more glass fiber tubes than any other dust control equipment manufacturer. With the installation of a Wheelabrator Glastube Collector, local air pollution control requirements were satisfied. You, too, can depend on Wheelabrator's Vital Values to assure solution of your Dust problems with optimum efficiency and economy.



Fine perlite dust in gas up to 550°F is captured in this Glastube Dust Collector to eliminate an air pollution problem. Write today for detailed data on this hot gas application.

VITAL VALUES FOR INDUSTRY

WHEELABRATOR DUST AND FUME CONTROL

WHEELABRATOR CORPORATION, 1280 S. Byrkit St., Mishawaka, Ind.
In Canada, WHEELABRATOR CORP. of Canada, Ltd. P.O. Box 490, Scarborough, Ont.

Enter 178 on card, page 207

R. K. Wills

December 31, 1960, terminated 40 years in the industrial advertising field for ROY K. WILLS. For 32 years he had been advertising manager of Baldwin-Lima-Hamilton Corporation, Lima Works, Lima, Ohio.

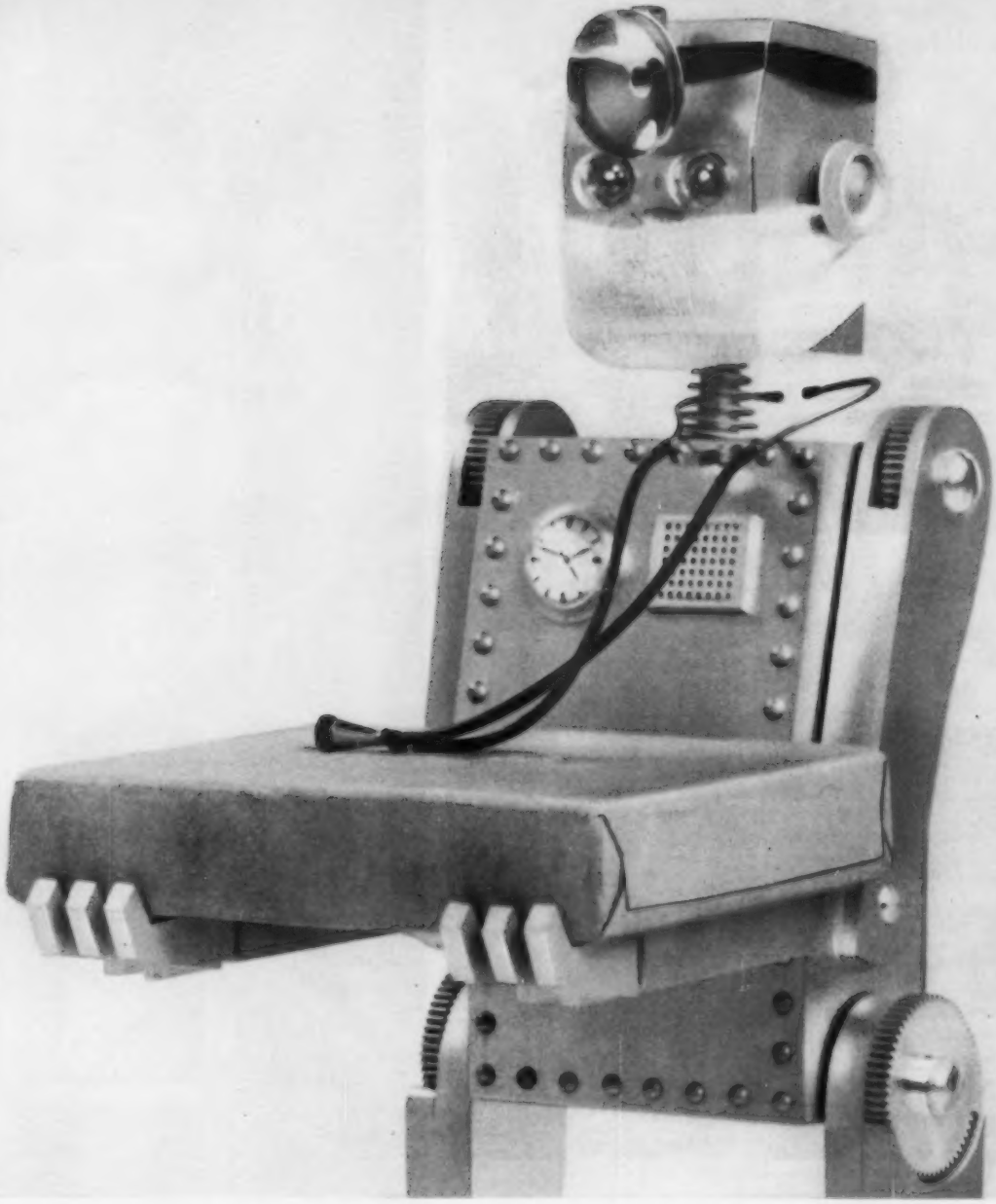
Mr. Wills launched his career in industry in 1913 while in high school, when he joined Marion Power Shovel Company, Marion, Ohio. In 1928, Mr. Wills joined Ohio Power Shovel Company, a subsidiary of Lima Locomotive Works, later known as Construction Equipment Division of the Baldwin-Lima-Hamilton Corporation.

He was active in trade associations to better serve the industry as a whole. He has served as chairman of the manufacturers division of the NCSA and on the board of directors, manufacturers division of the NSGA. He is a member of Construction Equipment Advertisers and the National Industrial Advertising Association.

Effective immediately, the name of Allis-Chalmers Manufacturing Company's pump and compressor department has been changed to the Fluid Dynamics department.

Allis-Chalmers has been manufacturing and selling fluid machinery for many years. The company reports the change in name has been made to more properly identify the company's ability to meet today's requirements for supplying fluid systems rather than just products.

EDMOND A. SIEBERT JR., has been elected vice-president in charge of sales of Meissner Engineers, Inc., Chicago, Ill. The firm has also announced the appointment of James A. Horstman as public relations director. In addition to his duties in that post Mr. Horstman will be responsible for the corporation's advertising, sales promotion, and employee communications activities.



Cleaner bags with the St. Regis Rotary Valve Cut-Off

As part of a continuing program to provide the rock products industry with automatic, trouble-free and economical packaging, St. Regis® has solved one of your major problems. Our packaging engineers have developed a unit that keeps your bags clean *during* filling and then delivers clean bags *from* the packer.

The St. Regis Rotary Valve Cut-Off eliminates spill during bag filling. This packer modernization kit ends blow-back by automatically venting the bag before discharge. And it discharges the filled bag to the conveyor, too! So, if you've been searching for a fool-proof way to get cleaner bags, this is the cost-cutting answer.

The Rotary Valve Cut-Off is another example of St. Regis *Packaging-in-Depth*. This complete bag service assures you of the *right* bag, the *right* machinery to pack it, plus the services of skilled engineers. To meet your *future* needs, this program also includes research to develop improved packaging methods and economies.

PACKAGING·IN·DEPTH BY St.Regis BAG DIVISION

In Canada, contact St. Regis Consolidated Packaging Co., Ltd. PAPER COMPANY

CHEVROLET
60

CHEVROLET
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CHEVROLET
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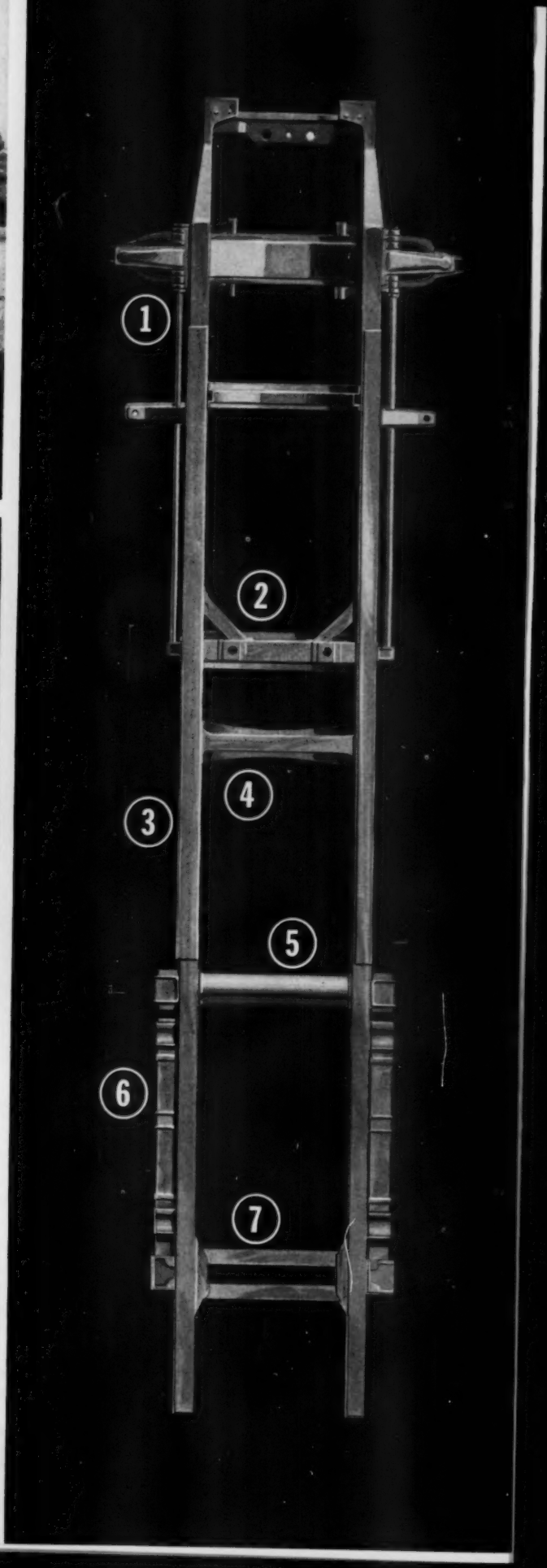
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HERE'S BONUS BACKBONE BRAWN—CHEVY TRUCKS SPECIALLY EQUIPPED FOR EXTRA-SEVERE DUTY!

They're built to blaze trails lesser trucks can't travel—to bull their way through brutal back country with king-sized loads—to stand up to terrain that can turn ordinary trucks into scrap iron before their time. Chevrolet's new heavy-duty off-highway chassis equipment option is good news for off-road operators everywhere. Now you can get the profit-protecting advantages of years-ahead Independent Front Suspension ride combined with the extra chassis beef your kind of work demands. The tougher your task, the more you'll appreciate the strength and durability built into this one!

■ **EXTRA BEEF FOR BRUTAL DUTY:** That beaver emblem on the sides of Chevrolet's new extra-duty-equipped medium- and heavy-duty trucks will be showing up more and more where the jobs are toughest—where getting the work done demands performance beyond the normal call of duty. These Chevies look the same on the outside, but there's a big difference down deep. More than just an add-on or build-up package, Chevrolet's new off-road equipment option combines maximum-duty suspension components with a special-built frame that's engineered for all-out ruggedness in every detail. A frame with K-braced ladder-type construction that delivers extra torsional resilience to soak up brutal beatings.

Here's what you get: ❶ Heavy-duty 4,000-lb. torsion bars up front, anchored right at the frame K-brace crossmember for sturdy support. (Anchors are truss-rod-connected under the frame for an extra margin of strength.) ❷ Massive K-brace crossmember between the torsion bar anchors, specially designed for maximum structural rigidity and fabricated of high-tensile-strength steel. ❸ Extra-heavy side rails, of full quarter-inch stock, with full-length L-plate reinforcements. ❹ Heavy-gauge alligator-jaw crossmembers in frame midsection that combine high strength with give-and-take resilience. ❺ A massive tubular crossmember, anchored in extra-heavy cast steel brackets at the rear spring front hangers. ❻ Maximum-duty 11,500-lb. rear springs of standard variable-rate design, plus the extra margin of 2,000-lb. auxiliary springs. And ❼ a massive double channel crossmember at the spring rear hangers heavily gusseted fore and aft—the finishing touch of rock-ribbed ruggedness between roughest roads and heaviest loads.

If yours is a truck-killing job, this new option is tailor-made for you. You can get it on any of four medium- and heavy-duty models to match your needs best, and you'll be surprised at how little it costs. See your Chevrolet dealer right away for full details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Availability: Heavy-Duty Off-Road Chassis Equipment

Model	Wheelbase	Cab-to-Axle	Max. GVW	Front Suspension Capacity	Rear Axle Capacity
C6303	157″	84″	19,500 lbs.	5,000 lbs.	15,000 lbs.
C6503	175″	102″	19,500 lbs.	5,000 lbs.	15,000 lbs.
C7303	157″	84″	23,000 lbs.	7,000 lbs.	16,000 lbs.
C7503	175″	102″	23,000 lbs.	7,000 lbs.	16,000 lbs.

1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

FRANK S. MAGEE retired from Hercules Powder Company after 46 years service, chiefly spent in the Explosives Department. He had been administrative assistant since 1951.

During his career with Hercules, he served a number of years at the Duluth, Minn. sales office, and at the Joplin, Mo. plant. While at the Duluth office, Mr. Magee became an expert on the Mesabi Range and the adjacent area. Hercules reports that many company salesmen and sales service men, including some of the top executives in the company, came under his influence through a training program he conducted.

Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio, has opened a new district office and factory parts warehouse at 426 U.S. Highway No. 1, Newark, N. J. for LIMA products, including shovels, cranes; Austin-Western crushing and screening equipment; Madsen asphalt plants and the LIMA Roadpacker.

The structure will house the eastern district office and complete parts-sales and service departments. CARL GILL is district manager and DAVE PAGLIARO is parts manager. The new warehouse is one of six LIMA parts warehouses located throughout the country.

The appointments of JOHN L. HALLETT and LOUIS H. OPPENHEIM as vice-presidents of Kaiser Industries Corporation, and of FRANKLIN T. MATTHIAS as vice-president of Henry J. Kaiser Company have been announced.

Mr. Hallett is general manager of Kaiser Engineers International, a division of the Henry J. Kaiser Company, of which he also is a vice-president. He joined the Kaiser organization in 1938 as an engineer on heavy construction projects, including Grand Coulee Dam.

Mr. Oppenheim is general manager of Kaiser Engineers and a vice-president of Henry J. Kaiser Company. He has been with the Kaiser organization since 1938, starting as a sand and gravel plant engineer.

Mr. Matthias is manager of heavy construction for Kaiser Engineers. Before joining the organization earlier this year, he was chief engineer and director of engineering and construction, Aluminum Company of Canada, Ltd., and was responsible for the $150,000,000 Chute-des-Passes hydroelectric project in Quebec.

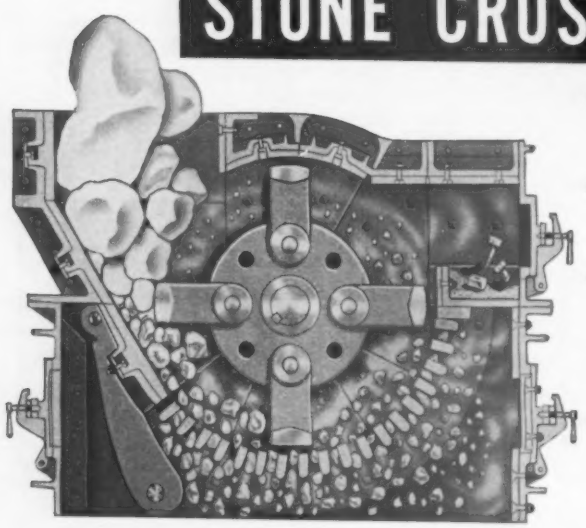
EARL D. WEAVER has been appointed plant manager of Cross Perforated Metals plant of the National-Standard Company's Reynolds Division. Mr. Weaver joined National-Standard in 1955 as a project engineer in the firm's Niles, Mich., plant. He was transferred to Cross in December, 1958, as chief engineer.

MAURICE L. SMITH was appointed manager, advertising and sales promotion, Metallurgical Products Department, General Electric Company, Detroit, Mich. He has been with the department for 11 years.

For the past three years he has been specialist product planning and market research, responsible for market development of refractory and reactive metals, now a part of the specialty alloys section, as well as cemented carbide products. Previously he served as field representative on carbide cutting tools, dies and component products, as well as on permanent magnets.

American Brake Shoe Company has joined with a Mexican firm, the Teziutlan Copper Company, to establish a million-dollar foundry subsidiary in Mexico. The subsidiary, Amsco Mexicana, S. A., located near Mexico City, operates a modern foundry capable of producing more than 400 tons of steel castings per month. Its output will go to the Mexican cement, mining, construction, and other heavy industrial customers. A large part of its production will be replacement parts for U. S. manufactured equipment for use in Mexico, and the plant has been designed to produce parts of original-equipment quality.

American MODEL ACS
STONE CRUSHERS



- Capacities up to 250 tons per hour
- Ruggedly built for extra heavy duty service
- Manganese steel liners, breaker plates, hammers and grate bars
- Wide range of reduction ... low-cost operation

Write today for literature! "Better Stone Crushing"

American PULVERIZER COMPANY
ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS
1059 MACKLIND AVE. ST. LOUIS 10, MO.

Enter 182 on card, page 207

Johnson & Towers Baltimore, Incorporated has been appointed industrial and marine distributor in Maryland for the Detroit Diesel Engine Division of General Motors.

In addition to the entire state of Maryland, the firm, with headquarters at 2214 Severn St., Baltimore, will represent GM Diesel in the district of Columbia; Hampshire, Morgan, Berkeley, and Jefferson counties in West Virginia; and the counties of Sussex and Kent in Delaware.

Strictly an "engine house", the company will handle industrial, construction, truck, marine, and other power applications with parts and service facilities, including trucks for field service calls, available 24 hours a day.

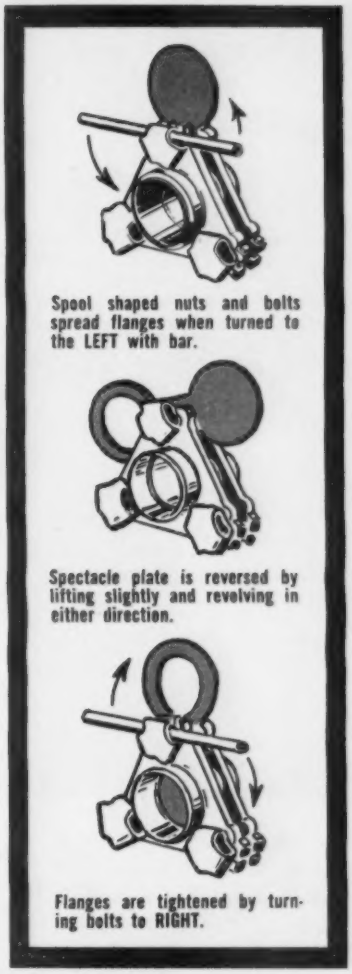
Personnel of Johnson & Towers have wide experience with GM Diesel engines. They are WALTER F. JOHNSON, president; C. J. LACY, vice-president and general manager; JOHN STULL, industrial manager; DOUGLAS KENNEDY, service manager, and ED LACY, parts department manager.

Dealers currently representing the new company with complete GM Diesel service and parts facilities are: Belden Marine Engine Repair, Ocean City, Md.; Madewell Shops, Cambridge, Md.; and John Trumpy and Sons, Annapolis, Md.

Ace Equipment Sales, Inc., 9522 N. E. Sandy Blvd., has been appointed dealer for P&H construction and mining products manufactured by Harnischfeger Corporation, Milwaukee, Wis.

The new dealership will cover a territory including northwestern counties of Oregon and southwestern counties of Washington. The Ace Equipment firm is headed by partners ROBERT VAN LORN and LES WILSON.

ROBERT L. SIEMER has been named staff assistant to the vice-president, sales, L. C. BLACK, of the Bucyrus-Erie Company, South Milwaukee, Wis. Mr. Siemer has been employed at B-E since 1953; he was appointed office manager in 1955, and administrative services manager in 1959.


Spool shaped nuts and bolts spread flanges when turned to the LEFT with bar.
Spectacle plate is reversed by lifting slightly and revolving in either direction.
Flanges are tightened by turning bolts to RIGHT.

The easiest, quickest way to blind a cement line . . . with absolute shut-off

HAMER 3-BOLT LINE BLIND VALVE

There's no danger of contaminating different grades of cement when your silo loading lines and laterals are equipped with Hamer 3-Bolt Line Blind Valves. An absolute shut-off is obtained in just a few minutes by one man. By backing off three bolts with a bar the spectacle plate is ready to swing from open to closed position and you have a solid-plate, leakproof, shut-off. Hamer Line Blind Valves can't wedge, jam, or stick.

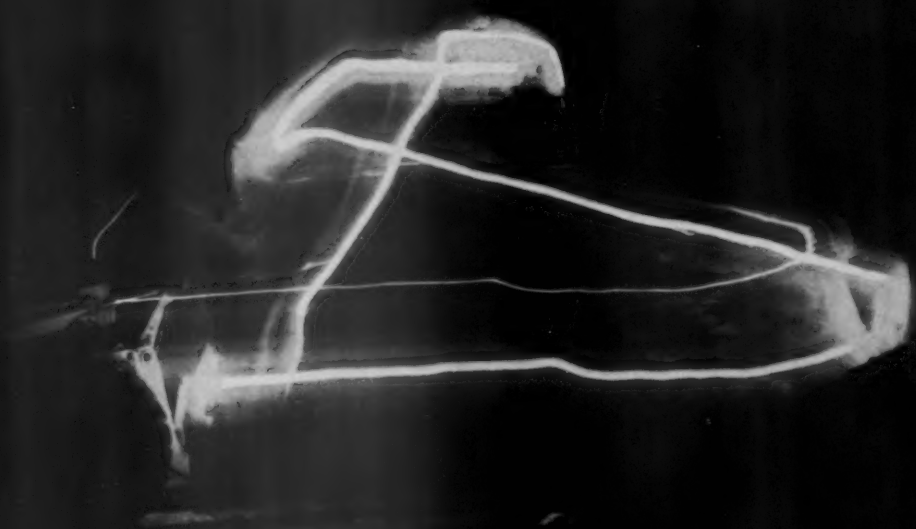
Use Hamer's on slurry or dry cement lines. They require minimum maintenance . . . are unsurpassed for positive action, easy operation, long-life, and resistance to abrasion. Ask your Hamer Valve specialist for complete information or write for latest catalog.

WECO WELL EQUIPMENT MFG. CORP. HOUSTON, TEXAS
Division of CHIKSAN COMPANY *a subsidiary of* FOOD MACHINERY AND CHEMICAL CORPORATION
NV-1-61 fmc

Enter 183 on card, page 207

KOEHRING 205 SKOOPER

SKOOPER'S standstill loading creates a light pattern that's short and compact . . . not long and extended like the one for the loader!



FRONT-END LOADER

"Rivers of light" show how SKOOPER outperforms front-end loader

There's Nothing Like It on Wheels or Tracks!

Cycle test proves SKOOPER best!

Shown here are actual time-exposure photographs of a Koehring 205 SKOOPER and a rubber-tired front-end loader of similar bucket capacity going through actual digging and dumping cycles under identical conditions. A light was attached to the bucket of each machine, and the light pattern traced by each bucket was recorded by time-exposure photography.

The light patterns show that, with SKOOPER, all motion means work . . . there are no flying starts, no spinning tires, no churning crawlers, no waste drive-in, back-off motion . . . SKOOPER stays in one spot and really bails dirt, delivers big loading tonnages — using less horsepower, with less maintenance!

See your Koehring distributor for complete details on the profit pattern that SKOOPER can produce for you!

SEE YOUR KOEHRING DISTRIBUTOR

K107

KOEHRING

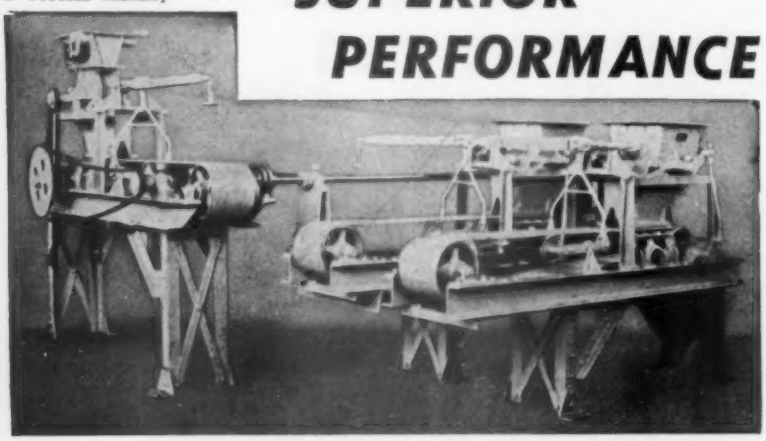
DIVISION OF KOEHRING COMPANY

Milwaukee 16, Wisconsin

Enter 184 on card, page 207

Battery of Poidometers in Process Industry

SUPERIOR PERFORMANCE



that's SCHAFFER POIDOMETERS

OVER 1600 NOW SERVING INDUSTRY

Write for **FREE** Catalog No. 5

SCHAFFER POIDOMETERS take top billing in performance in scaling requirements—also in weighing, blending, feeding, mixing, recording and proportioning.

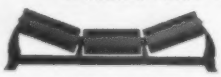
SCHAFFER POIDOMETER CO.

2828 SMALLMAN ST. • PITTSBURGH 22, PA.

Enter 186-A on card, page 207

ATLAS IDLERS AND PULLEYS

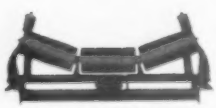
WILL INCREASE YOUR PROFITS BY HANDLING GREATER LOADS AT LOWEST COSTS



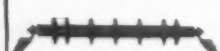
TROUGHING IDLERS

IMPACT IDLERS

RETURN IDLERS



SELF-ALIGNING IDLERS



RUBBER DISC RETURN IDLERS

ATLAS idlers are available for 12" through 48" belts: 3½", 4" and 5" dia. rolls with ball and roller bearings.

For many years ATLAS idlers have been providing trouble free service. These idlers are designed to meet the most exacting requirements of general and heavy duty service. The use of ATLAS idlers assure users minimum maintenance cost and maximum equipment life.

SOLID TYPE CONVEYOR PULLEYS

WING TYPE SELF CLEANING PULLEYS WITH EASY ON—EASY OFF TAPER-LOCK BUSHINGS

See Your ATLAS Distributor or Contact • Ask for Bulletins 8C and 9A.

ATLAS CONVEYOR CO., CLINTONVILLE, WISCONSIN, U.S.A.

Manufacturers of portable and stationary conveyors and bucket elevators for handling loose material such as sand, gravel, crushed stone, coal, coke, cement, etc.

Enter 186-B on card, page 207

Embry Tractor & Supply Company, Incorporated, 3936 Park Drive, Louisville, Ky., has been appointed a dealer for the P&H construction and mining equipment made by Harnischfeger Corporation. The new dealership will handle the complete line of P&H crawler and rubber-mounted power cranes and shovels from the 12½-ton 105B-TC Miti-Mite through the 110-ton capacity model 1015.

The Embry firm has recently expanded into construction machinery lines, after 14 years in the industrial material handling equipment business. In addition to the P&H line, the firm handles Case, Hyster, Whiting, and American Chain and Cable.

President of the firm is HARRY W. EMBRY JR.; CARY CHALKLEY is vice-president and general manager. Construction equipment sales are administered by F. E. BURGIN, a veteran of 25 years in the field, with a team of eight salesmen covering Kentucky and southern Indiana. Machine field servicing is available throughout the area as well as in the service shop at Louisville. A branch office and shop are at 603 W. Main St., Newburgh, Ind.

Newest appointment to the sales staff of Linder Industrial Machinery Company is ROBERT M. LANKFORD. His territory is the North Central area of the state. SCOTT LINDER is president of the firm.

Linder Industrial Machinery sells Michigan rubber-tired dozers, scrapers, loaders and shovels, Lima cranes and draglines, Pitman hydraulic cranes, Rocket truck mixers, Watco concrete plants and Standard asphalt plants.

Fifteen security analysts, representing New York brokerage houses, recently toured Gardner-Denver Company plants at Grand Haven, Mich.; Denver, Colo.; and Quincy, Ill. to get first-hand information for their clients about the equipment manufacturer's newest products and operations.

G. V. LEECE, president; E. V. ERICKSON, executive vice-president, and other Gardner-Denver officials were hosts for the security analysts group who traveled by chartered plane.

BAY CITY

digging ability pays off in rock like this!

Any shovel can load out gravel! But what kind of output would you get in rock like this? It's tough digging — no doubt about it — and certainly no place for an ordinary excavator. Yet, it's a made-to-order situation for BAY CITY digging ability. Here's why:

BAY CITY'S one-piece continuous chain crowd, from front drum through automatic chain adjuster to shipper shaft, provides a powerful crowd-out action. Independent of all other functions, the crowd action gives the operator positive, accurate control of the dipper at every point in the digging cycle. Retract is power-operated, at twice the crowd-out speed, and provides positive handle-control throughout the cycle.

Simple, trouble-free, instantaneous controls mean faster operation, peak production. Mechanical power-controlled boosters actuate drum clutches with minimum effort. The sure, smooth engagement of the large diameter swingers rotates machine and load with a smooth, gliding motion . . . assures careful dumping of load, reduced spillage.

The digging ability of a BAY CITY can be yours. Why not take advantage of it? Stop in to see your BAY CITY dealer soon and explain your pit needs to him. He handles ¾- to 1½-yd. excavators, and will gladly give you the complete story on the size you need.

BAY CITY SHOVELS, INC.
2611-E Center Ave.
BAY CITY, MICHIGAN

(A subsidiary of UNIT CRANE & SHOVEL CORP.)

GarWood HOPPER TRAILERS ...SPEED HAULING OF SAND,

New Hauling Method Drastically Reduces Operating and Maintenance Costs

WAYNE, MICHIGAN—Gar Wood Industries, world's pioneer truck equipment firm, announces a revolutionary new bulk hauling method for any free-flowing material. Proved for the past eight years in widely diversified applications throughout the West, the method utilizes all-steel hopper trailers designed and built by Gar Wood.

Immediate and most important advantage of Gar Wood's hopper trailer method is the fact that far greater payloads can now be hauled over the nation's highways and roads. In addition, the method is much faster, less costly and there's no chance of damage or loss from spillage, weather, or contamination.

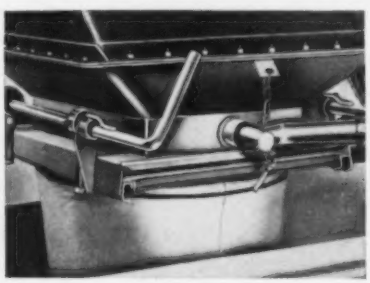
Payload increases and faster operation result from Gar Wood's exclusive Mono-Shell design which reduces tare weight, and from trailer design and mounting techniques that let Gar Wood distribute more weight over a much greater axle span. Mono-Shell hopper trailers let you increase legal payloads 23% or more per trip... even two or three tons more than other trailer methods.

If you handle free-flowing materials of any type, the Gar Wood enclosed hopper method can provide an effective way to increase payloads and increase profits. It will pay you to get a complete payload analysis from your Gar Wood distributor.

PATENTED BUTTERFLY GATES INSURE FASTER, CLEANER, FOOL-PROOF OPERATION

Gar Wood's patented butterfly gates seal the load completely from dirt and water. They provide fast, safe dumping for powdered and granular bulk commodities... are safe and easy to operate... virtually maintenance-free. Removable sock assembly provides full protection from wind and weather during discharge, is easily attached, removed, and can be stored in weathertight compartment during transit. Only one sock needed per train.

For complete flexibility, Gar Wood offers a split butterfly gate. It operates either as a solid butterfly for cement and other powdered materials, or will handle aggregates up to 1½-inch diameter.



Gar Wood hopper trailer models are offered as double trains, and as semi-trailers for both single- and tandem-axle tractors.

Open Hoppers Ideal for Contractors

Contractor-type hoppers by Gar Wood are finding wide application in hauling dirt, aggregate, even hot asphalt. Hi-Tensile steel, all-welded construction makes them extra rugged. Yet light-weight Mono-Shell design means biggest legal payloads.

A complete line of discharge gates tailor Mono-Shell hoppers to your exact requirements. Gar Wood's air-powered clamshell gate has twin cylinders that close against the load. Optional cab-operated controls are widely used for fast, on-the-go dumping and windrowing.

Cable-operated door-type gate is ideal for pit dumping, plant-to-plant use and long-haul operations. Available with optional air trip or air rewind. Gar Wood also offers manually-operated clamshell gate, transverse spreader gate and rack-and-pinion gate models.

INCREASE LEGAL PAYLOADS GRAVEL AND CEMENT

GRAVITY UNLOADING METHOD OFFERS MANY ADVANTAGES

New Gar Wood Mono-Shell hopper trailers give you the benefit of gravity unloading, the most economical of all discharge methods. You save on first cost because there's no mechanical or pneumatic unloading equipment tacked-on to the trailer price. You save plenty on maintenance, too. Gar Wood's patented butterfly gates are virtually maintenance-free.

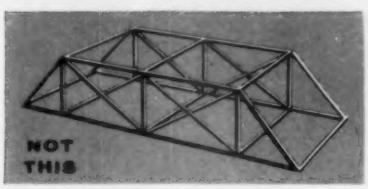
Added flexibility is another big advantage of gravity unloading. Long used by the railroads, this method is now available with high-speed, over-the-road truck equipment. You set your own delivery schedules! And, with compartmented Gar Wood models you can haul sand, cement, and aggregate all in the same unit . . . as you need them, *when* you need them.

Gar Wood's gravity unloading eliminates dead-weight mechanical or pneumatic discharge equipment . . . lets you haul 3000 to 4000 pounds *more* payload. In fact, the savings in weight alone can more than offset the cost of pit equipment.

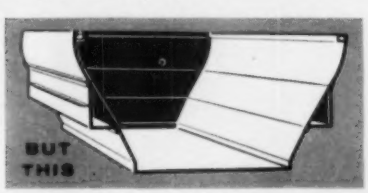
These models can be equipped with either permanent or removable aluminum domes. Loading hatches are fitted with vented, self-locking covers which allow free "breathing" yet keep water out. They offer complete all-weather protection for hauling cement, lime, chemicals, and other commodities.

Enclosed Gar Wood Mono-Shell hoppers are also available as semi-trailer units and can be equipped with one, two, or three discharge gates. Some models are compartmented for fast, positive cleanout and for hauling different materials on the same trip without contamination.

Mono-Shell Design Eliminates Dead Weight



Conventional design has heavy frame and cross braces that obstruct loading. Shell must still be added to this complex frame.



With Mono-Shell hopper design the contours of the body shell itself form all the required strength and support for a stronger, yet lighter body.

Complete Sales and Service Facilities Through Gar Wood Distributors

Mono-Shell hopper trailers and gates are sold and serviced by the nation's largest network of experienced truck equipment specialists. These Gar Wood distributors know your local hauling problems, understand your state axle-weight laws. They can show you how Gar Wood hopper trailers are customized to give you bigger payloads, and they will assist you in arranging financing.

FIND OUT HOW YOU CAN INCREASE YOUR PAYLOADS AND PROFITS
SEND FOR FREE CATALOG TODAY

Name_____

Address_____

City_____ State_____

☐ SEND FREE LITERATURE

☐ SEND FREE PAYLOAD ANALYSIS FOR THE FOLLOWING:

Type of material hauled_____

Present type of equipment_____

Tare weight of present equipment_____

Tons hauled per trip_____

Number of hauling units_____

Send coupon to:

GAR WOOD INDUSTRIES, INC.

Customer Service Dept.
Wayne, Michigan

Enter 188 on card, page 207

Now SKF has improved the spherical roller bearing it invented!

This new spherical roller bearing offers even higher capacity than SKF's original, self-aligning bearing – and meets the needs of today's faster, more productive machinery. In some cases, the increase in capacity is as much as 54% – corresponding to more than 4 times longer service life!

Here's how these improvements have been obtained:

1. Eliminating undercuts and integral flanges – helps provide space for larger rollers and longer effective contact between rollers and races.

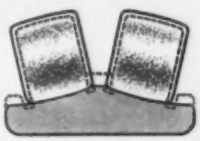


Fig. 1

Fig. 2

2. Using symmetrical rollers, unrestricted by flanges – ensures uniform load distribution over the roller length at all times, even under heavy thrust load.

3. Using an axially floating guide ring – provides effective roller guiding, and minimizes friction at roller ends.

Fig. 3

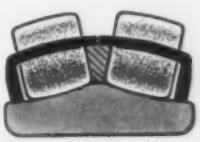


Fig. 4

4. Using a strong "window-type" cage for each row of rollers—helps ensure dependable operation over a full range of loads and speeds.

5. Placing a lubricant duct in the center of the outer ring—helps channel lubricants directly to the rollers and push contaminants away.

Fig. 5

For full details on this new high-capacity spherical roller bearing call the nearest SKF sales office or authorized SKF distributor listed in the yellow pages of the telephone book.

5931

Spherical, Cylindrical, Ball, and Tyson® Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

®REG. U. S. PAT. OFF.

NEW SAND AND PRACTICALLY

8 DEISTER Screens play key role in modern

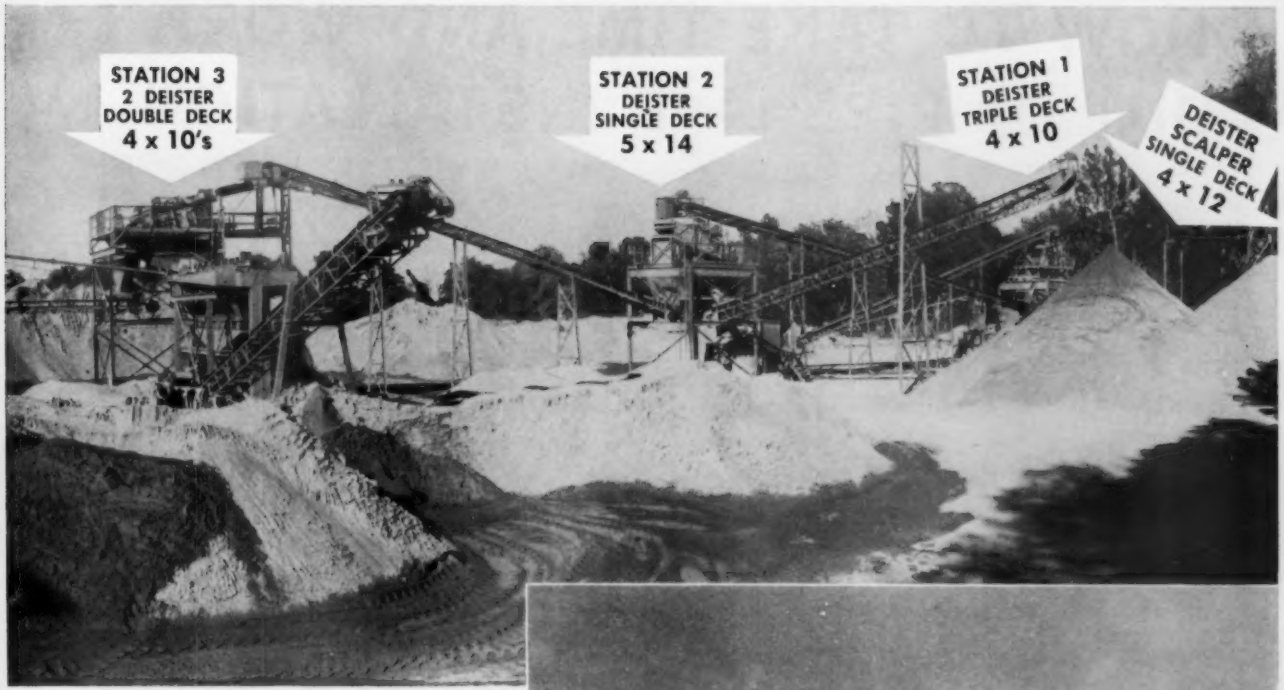
IN DESIGNING THE PLANT shown above, Robert C. Myers, General Manager of Myers Gravel & Sand Co., sought to combine speed with an absolute minimum of operating attention and maintenance. The success of his efforts is confirmed by production records chalked up since the Anderson (Ind.) plant opened last June. Mr. Myers reports that full capacity production is 300 tons per hour.

Every detail of the Myers plant is designed to make operation as automatic as possible. All-steel construction includes six stack conveyors, one traveling stack conveyor and one shuttle conveyor for stockpiling. A modern control center is strategically located so that the superintendent can observe the entire plant. There is even provision for closed circuit TV surveillance if needed.

Automatic production calls for trouble-free equipment and that's why Deister Vibrating Screens are used throughout the Myers plant. There are eight Deisters in all — heavy-duty Type UHS models with one, two or three decks as required by the particular screening operation (see arrows).

Mr. Myers explains the decision to standardize on Deister this way: "We bought our first two Deister Screens in 1958 for use in our old plant. Both have run perfectly for two years, sometimes 16 hours a day, with no maintenance except for lubrication

The flexibility of Myers' system is demonstrated here at Station #5 where two double-deck Deister Screens operating in tandem are located over a 4-bin arrangement. Finished sizes from each bin can be fed to trucks, to any of four stockpiles, or to a crusher and thence to Station #4, a 100% crushed aggregates operation. Blended sizes can be routed in the same way.



GRAVEL PLANT RUNS ITSELF

plant operation

and cloth replacement. When it came time to build our new plant, Deister was the unanimous choice."

This endorsement is seconded by Plant Superintendent Alex Faulds. In addition to commenting on the trouble-free operation of Deister Screens, Mr. Faulds notes that it's much easier to change screen cloth on a Deister. "We can change cloth in less than half an hour during lunch periods without losing a minute of operating time."

Myers is one of hundreds of aggregate producers who have boosted output and cut maintenance costs with Deister Screens. Deister engineers welcome the opportunity to explain how your plant can reap the same benefits.

Robert C. Myers *(left)*, Secretary-Treasurer & General Manager, and Alex Faulds, Plant Superintendent, agree that Deister Screens outperform all other makes previously used by Myers.

DEISTER MACHINE CO.
1933 E. Wayne St., Ft. Wayne, Ind.

DEISTER

Enter 192 on card, page 207

HOW TO TAKE TIME AND WORK OUT OF PIPE LINE INSTALLATION

NAYLOR Wedgelock couplings make a positive connection, securely anchored in standard weight grooved ends.

To help you get the job done faster, easier and more economically, NAYLOR offers a pipe and coupling combination to simplify pipe line installations.

NAYLOR's exclusive lockseamed, spiral-welded structure gives you pipe that is light in weight without sacrifice of strength and safety. It's easy to transport, handle and install—saves time, trouble and money right down the line.

WEDGELOCK couplings fit into this economy picture, too. They simplify and speed connections since a hammer is the only tool required to connect or disconnect them, and joints can be made up with only one side of the pipe in the open.

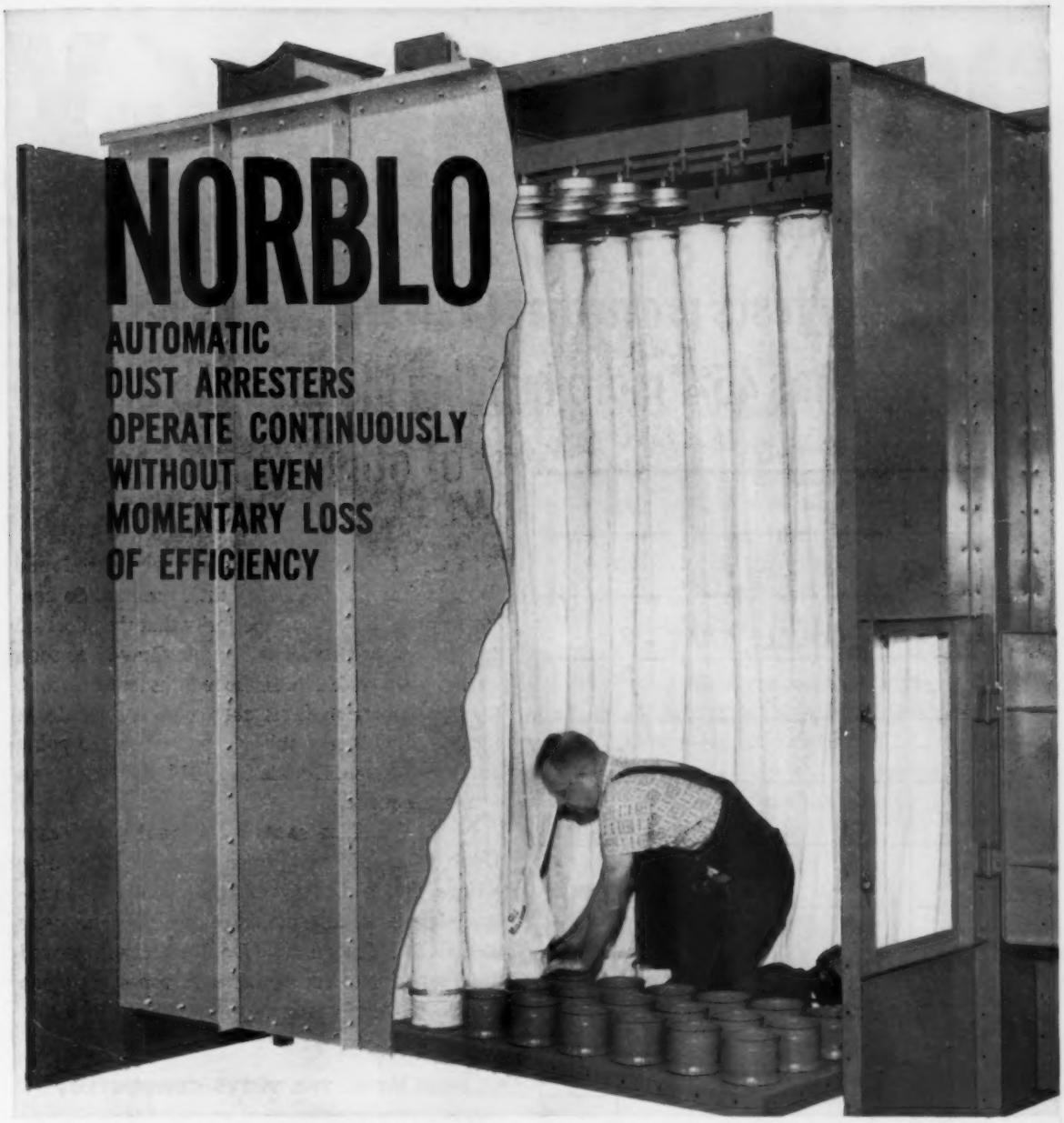
Whether it's air, water, tailings or ventilating service, it will pay you to look into this dependable combination.

Write for Bulletin No. 59

NAYLOR PIPE *Company*

1257 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

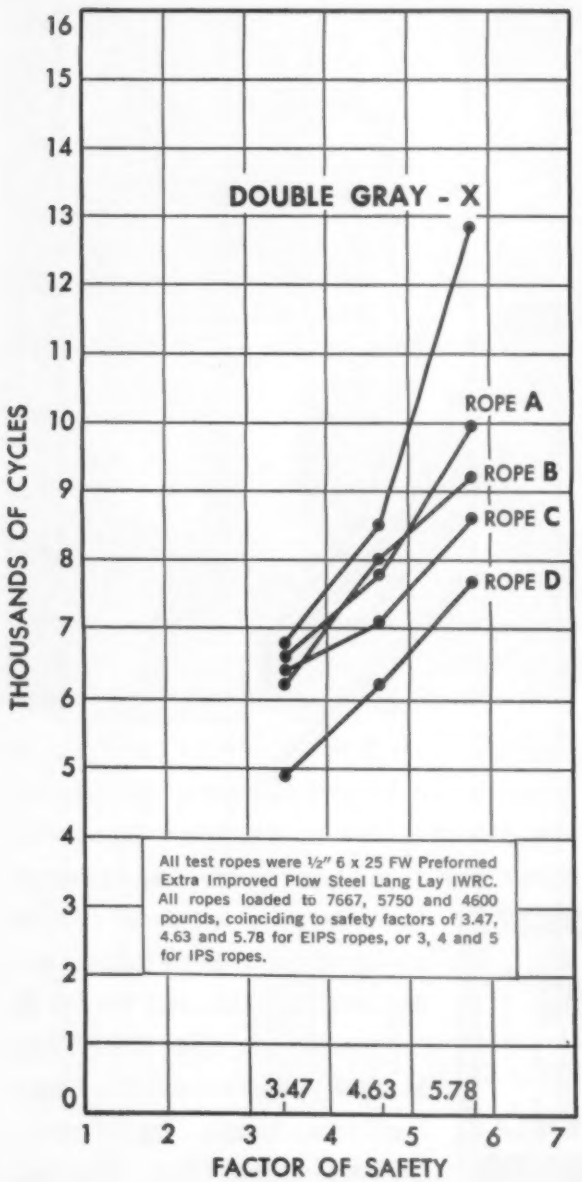


Periodic cleaning, repair or replacement of bags, and minor maintenance can be accomplished while the collector remains in operation. One compartment, as shown above, can be isolated in the Norblo design, with all mechanical parts outside the gas stream. Continuous cyclic shaking, by compartment, allows operation without interruption. ■ This is why in modern plant operations you'll find an increasing preference for Norblo Automatic Bag Arresters. Where efficient production requires continuous operation more and more industries specify Norblo Dust Arresters. Over 80% of the cement industry relies on Norblo equipment for drying, grinding and finishing operations. ■ Buell-Norblo equipment can play an essential part in your process. Write for complete information on any type of dust collection problem. Buell Engineering Company, Inc., Dept. 18-C, 123 William Street, New York 38, New York. Northern Blower Division, 6407 Barberton Avenue, Cleveland, Ohio. Electric Precipitators · Cyclones · Bag Collectors · Combination Systems · Fans · Classifiers.

buell Norblo®

DOUBLE GRAY-X®

Laboratory tests prove that CF&I-Wickwire's premium wire rope has 45%* more bending life than the average of other ropes tested


DOUBLE GRAY - X
ROPE A
ROPE B
ROPE C
ROPE D
THOUSANDS OF CYCLES
FACTOR OF SAFETY
3.47
4.63
5.78
All test ropes were ½" 6 x 25 FW Preformed Extra Improved Plow Steel Lang Lay IWRC. All ropes loaded to 7667, 5750 and 4600 pounds, coinciding to safety factors of 3.47, 4.63 and 5.78 for EIPS ropes, or 3, 4 and 5 for IPS ropes.

The CF&I-Wickwire engineers who developed Double Gray-X *believed* in their product. So confident were they of its superiority that they decided to field-test prototypes of Double Gray-X as soon as they were perfected. In the months that followed, the top American firms chosen to participate in these tests delivered this verdict: when the going really gets tough, Double Gray-X lasts longer than other wire ropes.

Now, CF&I presents additional proof that Double Gray-X has *superior resistance to bending fatigue*, the chief enemy of wire rope life. In an extended series of tests conducted over the past year at CF&I's Palmer Plant, Double Gray-X proved itself superior to four other wire ropes, all made by major manufacturers.

HOW WERE THE TESTS CONDUCTED?

The five wire ropes tested—all identical in size and specification — all exceeded the catalog breaking strength of extra-improved plow steel ropes. Each rope was subjected to the same series of tests on a 25,000-pound, multiple-reeved fatigue machine, the largest of its kind. This machine punishes wire rope to destruction by bending it back and forth over sheaves.

*Percentage above average of all other wire ropes tested at safety factor of 5.78

lasts longer

WHAT WERE THE RESULTS OF THE TESTS?

As the chart indicates, Double Gray-X lasted longer than any of the four competing wire ropes at all the safety factors used in the test. At the highest and most commonly-used safety factor, Double Gray-X lasted 30% longer than the rope that lasted next longest, and 68% longer than the rope that lasted the shortest time. Double Gray-X lasted 45% longer than the average of all other wire ropes tested at this safety factor.

WHY DOES DOUBLE GRAY-X LAST LONGER?

It lasts longer because it's the result of a breakthrough in wire-drawing technique. This new process, which includes the use of molybdenum disulphide, creates these outstanding fatigue-resistance factors in Double Gray-X:

- **A Molecular Shield** – Molybdenum disulphide creates a shield around every wire, which serves as a lubricant and prevents the wires from grinding together as the rope operates. Less internal friction results in longer rope life.

- **Smoother Wire Surface** – CF&I's new wire-drawing technique helps eliminate minute surface imperfections in the wire. This smoother surface provides better resistance to fatigue.

- **Extra Toughness** – Molybdenum disulphide lubricates the wires during the drawing process. Since less power is required and less heat generated during this operation, the original toughness of the wires is better preserved.

WHAT CAN DOUBLE GRAY-X DO FOR YOU?

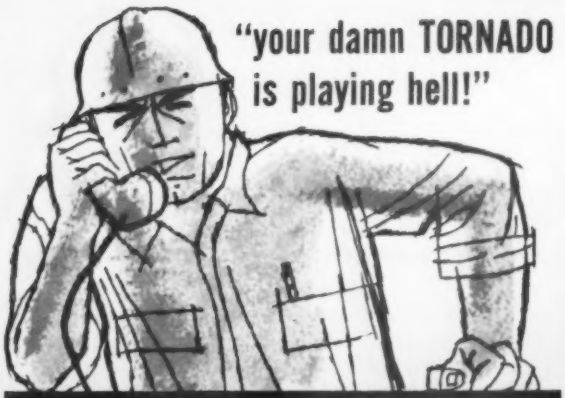
It can save you money. Because Double Gray-X lasts longer on even the toughest jobs, it cuts wire rope repair and replacement costs and rope-installation time. The net result to you is an overall reduction of costly equipment downtime, and a lowering of your total wire rope investment.

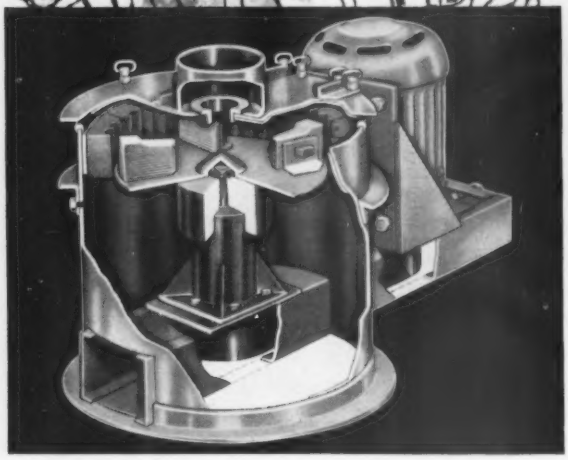
As a matter of fact, those of our customers who have already bought and field-tested Double Gray-X have reported considerably longer life and less downtime on their equipment. Join these satisfied customers—try Double Gray-X on *your* equipment right away. Ask your CF&I salesman to give you complete details on these tests.

The Colorado Fuel and Iron Corporation

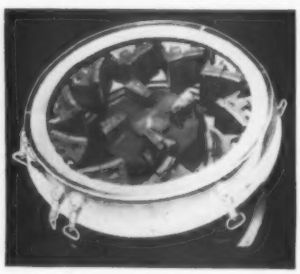
DENVER • OAKLAND • NEW YORK

SALES OFFICES IN ALL KEY CITIES





"I wouldn't buy one—Not me!! I was too smart to fall for your salesman's line of baloney.
"So you sold a Tornado Square Impact Crusher to one of my competitors.
"And now that guy is making plenty of profits turning a big waste pile into a grade of cubical gravel I can't match —and he's selling it at a high price, too!
"Get down here QUICK and talk with me about setting up a couple of Tornado Crushers in MY plant. I'll show that guy what REAL production is like!"
. . . those are the actual words used by a quarry owner in a phone call to us. Now he's the delighted owner of two Tornado Crushers—he's turning out a product which is eagerly snapped up by quality-conscious buyers.



Maybe YOU ought to get the facts about what the amazingly versatile, light-weight, low-cost, easily maintained Tornado Crusher can do for YOU. Ask for free folder. Or if you want quick action, rush us a hundred-pound sample of your material —tell us what type of product you want—how many tons per hour you need—and we'll give you all the dope, as it applies to YOU.

TOM BRIDGEWATER

WERCO Steel Company

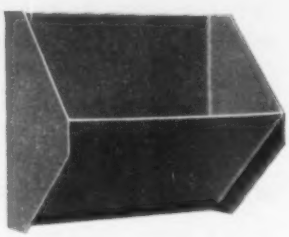
2151 East 83rd Street, Chicago 17, Ill.
Phone ESsex 5-8446
Cable Address, IMPACTOR

Enter 198-A on card, page 207

TOUGH
CONVEYING and ELEVATING CONDITIONS ?

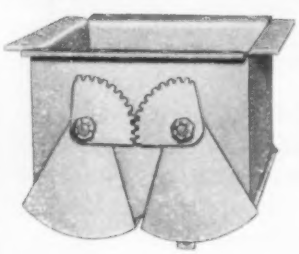
STANDARD METAL'S users lick TOUGH problems Every Day!

STANDARD METAL'S CONTINUOUS ELEVATOR BUCKET STYLE No. 2



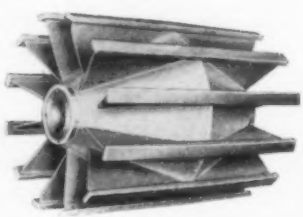
This long-life bucket resists wear — delivers outstanding service and economy under severest conditions. This style is just one of the complete line of low-cost, rugged steel buckets manufactured by Standard Metal. Available in Salem, Style "A" and other continuous style buckets.

STANDARD METAL'S BIN GATES



Here's the all-steel, gear-operated Duplex Bin Gate for faster, easier material handling at minimum cost. Now supplied standard with twin bracket at bottom of gate, drilled to accommodate bolt for fulcrum lever.

STANDARD METAL'S WING-TYPE SELF-CLEANING PULLEY



Includes Taper-Lock Split Bushing to save time and trouble when mounting shaft. These pulleys are light in weight, yet their all-steel welded construction resists breaking, and delivers many years of trouble-free, low-cost service. Also available with solid hubs bored to specifications.

Contact us for full details and quotations on your particular needs in elevating and conveying equipment—for new installations or replacements. Ask for the catalog showing the complete Standard line.

STANDARD METAL MFG. CO.
110 CENTER ST. MALINTA, OHIO

Enter 198-B on card, page 207

Eliminate corrosion...

for lower drilling cost...

with **SANDVIK Coromant** *SR-Treated Integral Steels!*

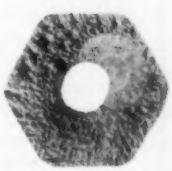
- Corrosion promotes breakage: You know, of course, the variety of mechanical stresses to which steels are subjected in work. Stresses cause fatigue; can cause premature rod breakage, before the normal tensile strength or even the yield point has been exceeded.

In most cases, fatigue failure starts from the point where corrosion has set in. In other words, corrosion sets up the conditions for a fatigue break to occur. Except—when you use Sandvik Coromant Integral Steels! The exclusive Sandvik SR-treatment* protects against corrosion and provides from 30 to 50% longer life than untreated steels.

You get other advantages too: Less loss of energy, since the bit is integral with the steel. There is no bit to "get lost". What's more, since Sandvik is one of the world's largest manufacturers of tungsten carbide, you get bigger and better inserts.

Sandvik Coromant Integral Steels are available from 1" to 1¾" bit diameter, in ¾", ⅞", and 1" hexagonal steel section.

Write today for complete information. Address: Dept. PQ-15.



Appearance of a fatigue breakage that often arises with rods that have not been protected against corrosion. Sandvik's SR-treatment* protects against such failures.

*pat. pend.

PROGRESS THROUGH BETTER TECHNOLOGY

BLUE RIBBON MINING AWARD 1960

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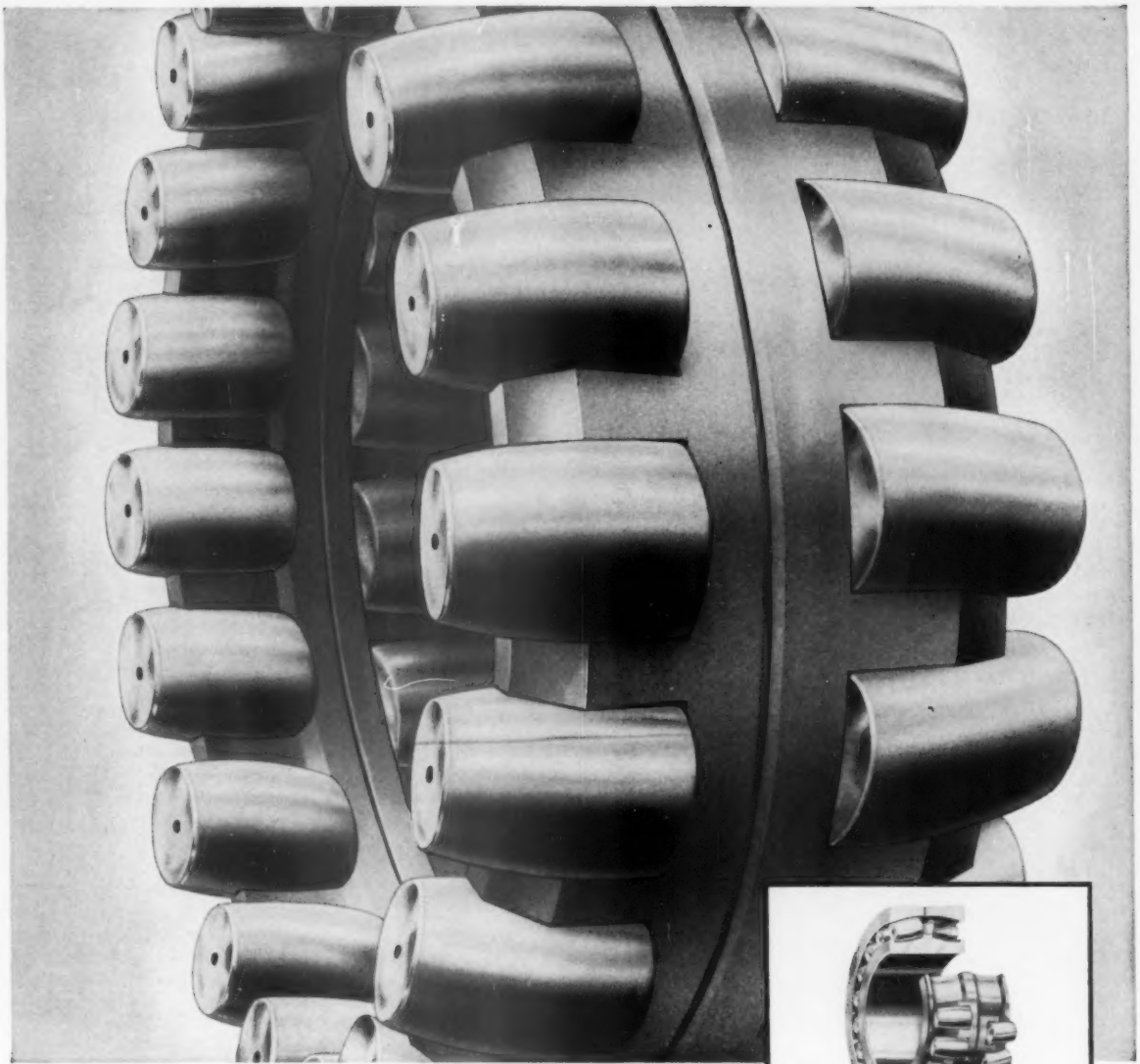


"Caged" for Longer Life!

The two land-riding cages in Torrington Spherical Roller Bearings assure proper roller spacing and guidance, even under rugged conditions of shock load and sustained high speeds. These fully machined cast bronze cages operate independently. Their design eliminates drag on rollers. These high-strength cages help bearings give longer life by providing low friction, smooth running and cool operation. Highly effective and generous lubrication of all contact surfaces is achieved with the open-end cage design.

The result: Torrington Spherical Roller Bearings are built to give extra years of unmatched service life in heavy-duty applications. Torrington's long experience in design, engineering and manufacture of every basic type of anti-friction bearing provides the finest spherical roller bearings available. You'll find it pays to standardize on Torrington.

Superior design features of TORRINGTON SPHERICAL ROLLER BEARINGS

- integral guide flange for roller stability
- asymmetrical rollers seek flange for positive guidance
- electronically matched rollers
- size-stabilized races
- fully machined land-riding bronze cages
- controlled internal clearances
- even load distribution
- inherent self-alignment
- long service life

progress through precision **TORRINGTON BEARINGS**

THE TORRINGTON COMPANY South Bend 21, Indiana • Torrington, Conn.

BIG APPETITE FOR ROCK PRODUCTS

For screening ease and speed, nothing matches the efficiency of Hendrick Perforated Metal screens. Large, precision perforations provide extra capacity for extra profits, eliminate blinding and assure accurate sizing. These heavy-duty high-carbon or heat treated steel screens are designed for continuous, wear-resistant service. They are available in flat or corrugated plate and in a wide range of round, square and hexagonal openings to suit your specific requirements. Furnished with standard hook flanges for easy attachment to any vibrator. Call your local Hendrick representative (he's listed in your Classified Telephone Directory under Metals, Perforated)—or use the coupon below for further information.

HENDRICK Manufacturing Co.
Carbondale, Penna.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens
Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel
Flooring • Shur-Site Treads • Armorgrids • Hendrick Hydro Dehazers

HENDRICK Manufacturing Company
Carbondale, Penna.

Gentlemen: I want more information on Hendrick Perforated Metal screens.

- ☐ Please have representative call.
- ☐ Please send FREE literature on Perforated Metal Screens.

Name_____
Title_____
Company_____
Street_____
City_____ State_____

ANY WAY YOU FIGURE IT . .

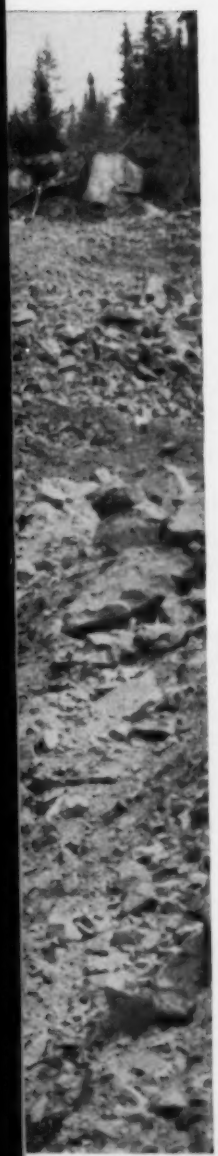
GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

Enter 202 on card, page 207

. . "Euc" Rear-Dumps are your best investment



Reliable job-proved performance, backed by competent and well stocked dealer parts and service facilities, makes "Euc" Rear-Dumps your best bet for top production at lowest over-all cost.

There are lots of ways to compare hauling equipment but no matter what method you use there's only one real measure — reliable performance on the job.

For over 25 years Euclid Rear-Dumps have been the outstanding choice of contractors, mines, quarries and industrial users of off-highway haulers. More than half of the orders for new "Eucs" are from previous owners — repeat business that is the best evidence of customer satisfaction with the product and the service available from Euclid dealers.

With this unequalled field experience and continuous product improvement, "Eucs" give you operating advantages that cut downtime and provide greater work-ability. An experienced dealer organization with complete parts stocks and service facilities is further assurance that your "Eucs" can always be kept in top shape wherever they may be working.

You can depend on "Eucs" and your Euclid dealer for bonus benefits that don't show in the specs but are mighty important in making Euclids your best investment.

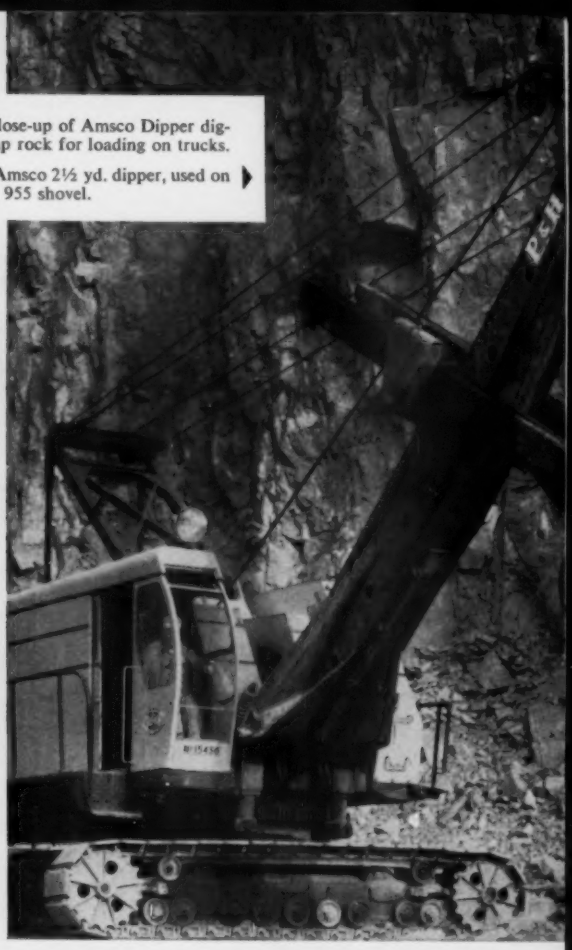
EUCLID Division of General Motors, Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Euclid pioneered many of the rear-dump features that are "standard" today . . . free floating springs, planetary type final drive, exhaust heated bodies, Torqmatic Drive with torque converter and semi-automatic transmission, double acting hoist and other engineering advances that cut hauling costs.

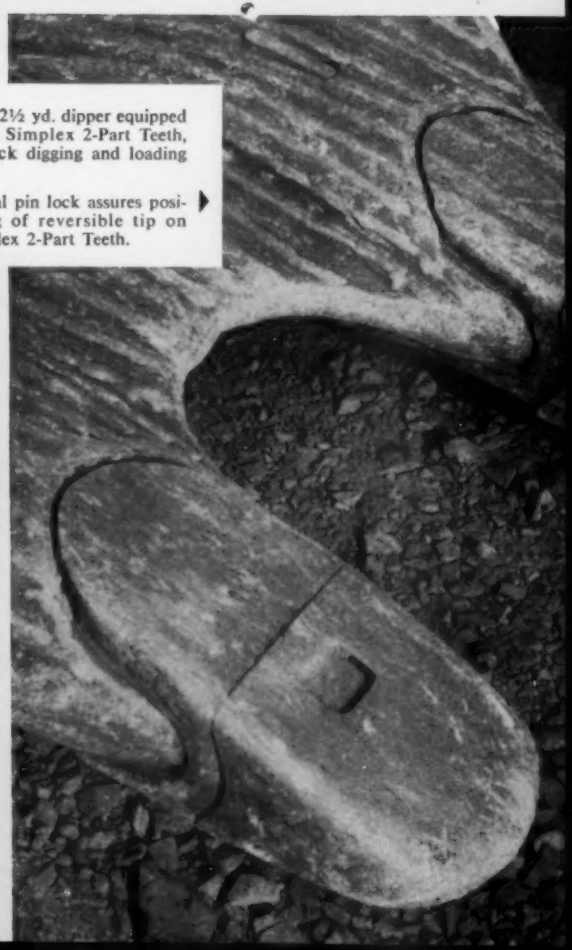
Left: Close-up of Amsco Dipper digging trap rock for loading on trucks.

Right: Amsco 2½ yd. dipper, used on P. & H. 955 shovel.



Left: Amsco 2½ yd. dipper equipped with Amsco Simplex 2-Part Teeth, used for rock digging and loading at quarry.

Right: Special pin lock assures positive locking of reversible tip on Amsco Simplex 2-Part Teeth.



More proof that...

AMSCO HELPS YOU MOVE MORE TONS PER DOLLAR

Read about the actual experience of a large New England quarry with Amsco Dippers and Simplex 2-Part Teeth*

"WE HAVEN'T WORN OUT AN AMSCO DIPPER IN 5 YEARS"

This, in the words of the quarry superintendent, sums up his experience with Amsco Manganese Steel Dippers. It's rugged work, all in rock, as you see from the pictures at the left. Shovel and dipper are used to load trap rock onto trucks for transportation to the crushing plant.

The Amsco Dipper was installed because the superintendent had used them before, and knew their reputation for long life under tough digging conditions. Experience is proving him right . . . again.

SIMPLEX TEETH HANDLE 25,000 YDS. OF ROCK BEFORE REPLACEMENT

At this same quarry, Amsco Simplex 2-Part Teeth are giving 120 hours' service...handling 25,000 to 30,000 yards of rock...before replacement is necessary. That's considerably longer service than has been obtained from competitive 2-part teeth, the quarry superintendent states.

Not only is the wear-life of these teeth exceptional, but operators like the ease of replacement, and the fact that the tips stay on without trouble.

For further information on Amsco Dippers or Simplex 2-Part Teeth, see your power shovel equipment dealer, or write to Amsco for technical bulletins showing sizes, types and application data. *Patent No. 2,904,908.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

Other plants in: Denver • Los Angeles • New Castle, Dela. • Oakland, California • St. Louis
In Canada: Joliette Steel and Manitoba Steel Foundry Divisions

Enter 204 on card, page 207

Using 4-yard bucket, new 900 Series AMERICAN proves its superior performance in limerock for Newberry, Corp., Newberry, Florida . . . a subsidiary of Duval Eng. & Contr. Co.

"best balanced machine in its class"

That's what T. B. Bibby — veteran operator with 38 years on dragline work — has to say about the 900 Series AMERICAN pictured here.

New from the ground up, the 900 Series AMERICAN combines the *best of today's* operating features, plus *years ahead* advantages not available in any other 4½-yard excavator. For example:

Telescoping axles on the 900 Series let you extend crawlers outward an extra 2½ feet overall for greater full-circle operating stability. Crawler side frames can be detached by simply removing two large bolts . . . greatly speeds knock-down for travel. Continuous, deep-section deck channels, 4 feet deep at center, give you a machinery deck of unmatched strength and rigidity. Extra-wide drums permit single layer wrapping with 90 or 100 ft. dragline boom.

There's much more to tell about this new and important entry into the excavator field . . . graduated air controls . . . 18″ ground clearance . . . choice of direct drive, single or 3-stage torque converter . . . independent swing . . . power load lowering. See your AMERICAN distributor — he'll help you analyze the 900 Series in terms of profit-potential on *your* type of work.

CC-711

SHOVELS ½ TO 4½ YDS
CLAMSHELLS—DRAGLINES

FORGED FITTINGS FOR
WIRE ROPE AND CHAIN
(Crosby-Laughlin Division)

AMERICAN

AMERICAN HOIST
and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

more information, please

Use postcard to receive literature or details on new equipment and products reported in this issue.

THE MAJOR PRODUCT LINES of the *Fuller Company* are listed in a 12-page bulletin, G-3D, offered by the company. Applications and performance of Fuller-Kinyon pumps, Airveyor® pneumatic conveyors, Fuller-Huron Airslide® fluidizing conveyors, rotary compressors and vacuum pumps, horizontal-grate coolers, Fuller-Humboldt suspension type preheaters, Sutorbilt positive displacement blowers and gas pumps, and Lehigh induced draft fans are outlined. Thirteen photographs and 18 drawings supplement the text. **(301)**

RATED AS A 15-TON LIFTCRANE AND A ⅜-YD. EXCAVATOR, Model 1014 truck crane is described in a pamphlet published by the manufacturer, *Unit Crane & Shovel Corp.* The unit reportedly is easily converted to dragline, clamshell, trenchhoe, or magnet. **(302)**

"VIBRATIONS FROM CONSTRUCTION BLASTING," a reprint of an article by Dr. L. Don Leet in "The Explosives Engineer," has been reprinted by the *Hercules Powder Company.* Dr. Leet is professor of geology and seismologist in charge, Seismograph Station, Harvard University. Included in the discussion of vibration are: elasticity and characteristic impedance, value of the seismograph, safe limits of the potential crater area and the zone of elastic vibrations, as well as the effectiveness and performance of various types of explosives. The 24-page reprint is available from Hercules. **(303)**

SHAFT-MOUNTED AND FLANGE-MOUNTED DRIVES are presented in a newly revised brochure released by *The Falk Corporation.* Recent engineering developments and the new series of flange-mounted drives that cover a torque range up 44,000 lb.-in. are included in this revision. **(304)**

PROTECTIVE COVERING for equipment is offered at low cost in a folder released by *Herculite Protective Fabrics.* Performance and cost of polyplastic and canvas are compared with the flameproof vinyl-nylon Herculite in a table. **(305)**

THE SERVICES OF THE ENGINEERING INDEX and the Engineering Societies Library are explained in two folders available from *Engineering Index, Inc.* Annotations of more than 34,000 articles covering 249 field of interest divisions in engineering were issued last year, and supplied on 3 x 5 cards. Sufficient information is provided on each card for the reader to decide if he wishes to see the entire article, which the Engineering Index can also provide. This service includes articles published in 20 languages and 44 countries. Bibliographies, searches, translations, photoprints, microfilming, and book loans are also provided. **(306)**

AIR ENGINEERING units, including blowers, coolers, and heat exchangers are described in a pamphlet published by *Niagara Blower Company.* **(307)**

WET PERMANENT-MAGNET DRUM SEPARATORS offered by *Stearns Magnetic Products* are described in a folder released by the company. The ceramic magnet units, in both concurrent and counter-rotation styles, in a variety of sizes, are used primarily as concentrators of magnetic ones and for the recovery of magnetic media in heavy-density separation systems. **(308)**

COMPONENTS BULLETIN 6057P for Rex-rated bucket elevators has been announced by the *Chain Belt Company.* The pamphlet features simplied selection charts and aids for the selection of centrifugal and continuous discharge elevator components. **(309)**

DIAMOND T'S NEW 4300 series 6-wheel gas-powered units and the new Model 4000 2-axle truck are set forth in a brochure released by *Diamond T Motor Truck Company.* Specifications, capacities, and on- and off-highway applications are given. **(310)**

MARCH ***PIT AND QUARRY*** ***1961***

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

Void after 60 days.

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THE NEW AMERICAN 900 SERIES CRAWLER CRANE-EXCAVATOR is described and illustrated in a brochure released by the manufacturer, *American Hoist & Derrick Co.* The air-controlled unit is in the 3½ to 4½-cu. yd. class, has a rated lifting capacity of 110 tons, and is capable of handling boom lengths to 270 ft., plus jibs. Ease of preparation for transport, and 18-in. ground clearance are also noted as features. **(311)**

"VARIABLE INDEPENDENT CONTROL" of the integrated operating levers that serve both as controls and engine throttles are featured in the new Model 4500 Vicon manufactured by *Manitowoc Engineering Corp.* The excavator (6-cu. yd. shovel or 7-cu. yd. dragline capacity) is described in a brochure. **(312)**

SCREW FEEDING EQUIPMENT, manufactured by *Vibra Screw Feeders, Inc.,* tested for 456 dry materials from abrasives to zinc stearate, is described in a folder released by the company. Feeding rates of the units range from 0.1 lb. per minute for an abrasive to 1,000 lb. per min. for stone dust. The folder lists the density in lb. per cu. ft., screw size of feeder, maximum rate in lb. per min., and measured percent of accuracy and consistency of the materials. **(313)**

A CONDENSED GENERAL CATALOG, M5, of the Manhattan Rubber Division of *Raybestos-Manhattan, Inc.,* describes the company's complete line. In addition to the basic specifications and information required for ordering, the catalog details the design and operating advantages of such new and newly constructed products as CX molded V-belts, length stabilized Condor V-belts, Ray-Man heavy duty conveyor belts for 45 deg. idlers, hot materials belts, the Wedlok splice, and high pressure burst-proof steam hose. **(314)**

USE OF KILMAG CLADEX IN THE HOT ZONE OF ROTARY kilns that process portland cement, dolomite, periclase, lime, gypsum, and expanded aggregates is explained in literature available from *H. K. Porter Company.* The material is a burned magnesite-chrome basic brick with a dimpled metal jacket that provides built-in expansion, and eliminates the need for paper shims. **(315)**

USE OF AN ONAN INSTAPAC TO PREVENT SHUTDOWN of fuel-burning equipment protected by Fireye Flame Safeguard Controls when commercial electric power is interrupted is very fully explained in a sheet available from the manufacturer, the *Onan Division* of *Studebaker-Packard Corporation.* **(316)**

THE 515-LB. 610-ED 9-SPEED TRANSMISSION manufactured by the Transmission Division of *Clark Equipment Company* is set forth in a folder available from the company. Longitudinal and transverse sections are drawn to scale, dimensions are stated, and specifications are detailed. **(317)**

METERING AND CONTROL INSTRUMENTS FOR ROTARY KILNS and associated equipment are described in a pamphlet published by *Bailey Meter Company.* Diagrams in which kiln, coolers, mills, and feeders are considered as one closely interrelated system illustrate the material. **(318)**

WEMCO SAND PUMPS for handling slurry sand, abrasive pulps, heavy density media, and slimes are described in Bulletin P7-B21, B22, published by the manufacturer, *Western Machinery Company.* A performance table for the various models is included. **(319)**

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*U. S., U. S. Possessions, and Canada only.
Pan American countries, $10 a year; elsewhere, $15 a year.

Primacord®

for maximum efficiency and safety when blasting with cap-insensitive explosives

Adequate priming is essential for maximum explosive performance and blast results when using prill-oil mixtures, nitrocarbonitrates or any other type of cartridged or bulk *cap-insensitive* explosives. Accordingly, explosives manufacturers have developed a variety of special, high-strength primers and, in all instances, these special primers are designed so they can be used with, and detonated by, Primacord Detonating Fuse.

This combination of cap insensitive explosives, special primers and Primacord, provides maximum economies, safety, plus other advantages for the majority of open pit, quarry and construction blasting. The use of many millions of feet of Primacord over the years has proved its great number of advantages.

1. Detonates at a speed of almost four miles per second along its entire length.
2. Has a minimum initiating strength of a blasting cap along its entire length.
3. Cannot be set off by sparks or stray electrical currents—or by normal vibration, friction or shock.
4. Is simple, easy, and economical to use.

Used as a downline, Primacord simplifies multiple priming and/or deck loading techniques. Saves time and labor costs when loading. As a trunkline, it connects all holes for instantaneous or surface delay initiation. Available in standard and special types, developed to meet varying needs. For further information, consult your explosives supplier or write

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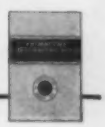
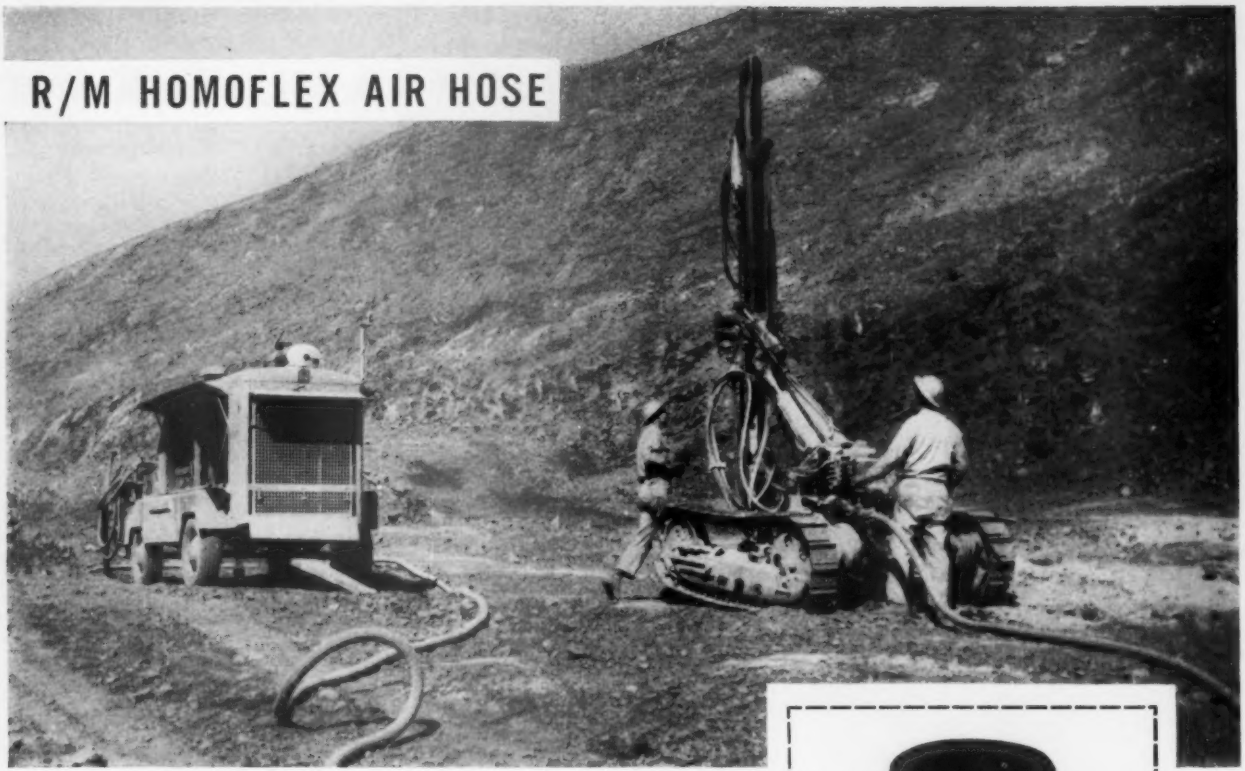
Simsbury, Connecticut • *Since 1836*
THERE IS A TYPE OF PRIMACORD® FOR EVERY TYPE OF BLASTING

E-B

Free! NEW GUIDE AND CONDENSED MANUAL: "PRIMACORD DETONATING FUSE . . . WHAT IT IS . . . HOW TO USE IT." ASK YOUR EXPLOSIVES MANUFACTURER OR WRITE US GIVING YOUR COMPANY NAME.





Flexible as a Rope...
HOMOFLEX Handles Easier, Lasts Longer in Rugged Work

Only Raybestos-Manhattan offers unique Homoflex construction —to produce a hose that is super-strong yet flexible... and weighs less than any other air hose of equal working pressure.

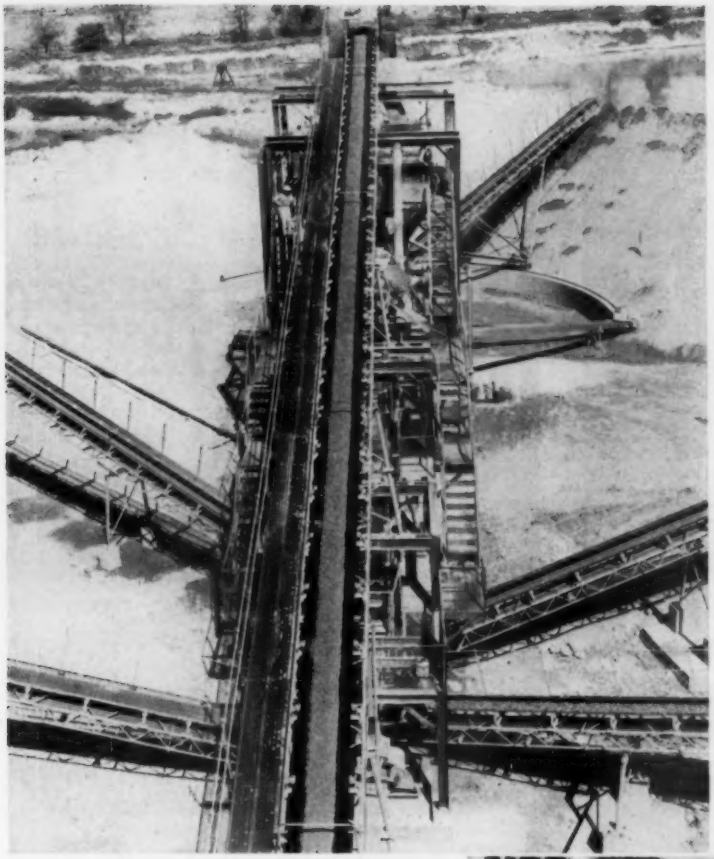
- **SUPER-STRONG**—assures longer, trouble-free service life
- **PRECISION BUILT**—with super-strength, low-stretch cords
- **MANDREL-MADE**—no pre-set twist
- **KINKLESS**—coils and uncoils freely in any direction
- **HOMOGENEOUS CONSTRUCTION**—provides inseparable tube-to-cover bond
- **SAFER, EASIER TO COUPLE**—inside and outside diameters are uniform

Homoflex H. D. Air Hose is also available for extra heavy duty and with *yellow cover stripe* for visibility; also in type for water in mine use. Let your R/M distributor show you how to get More Use per Dollar with R/M hose. Write for Catalog M5.

STRONG—LIGHT—KINKLESS

EXCLUSIVE HOMOFLEX CONSTRUCTION makes strength member and tube virtually inseparable for long, trouble-free service. Uniform inside and outside diameters permit faster, safer, easier coupling—faster, fuller flow.

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION • PASSAIC, N. J.
ENGINEERED RUBBER PRODUCTS



RAY-MAN Conveyor Belt

Troughs Deeper, Trains Easier

Ray-Man construction meets the performance requirements for Cantwell Machinery Company conveyors at Marble Cliff Quarries Company's Arrow Sand and Gravel Plant, Columbus, Ohio. Ray-Man has the flexibility and troughability to haul fuller loads—even with small pulleys, reverse bends, snub or take-up pulleys. No breaker is required . . . and Ray-Man *holds* fasteners. Also has exclusive XDC Cover for longer life.

- **HIGH COVER-ADHESION ALL AROUND**—top, bottom, and edges
- **FULL COVER THICKNESS USED**—no breaker needed—longer cover life
- **SPLICES LAST LONGER**—hold fasteners better
- **MORE TROUGHABLE AND TRAINABLE**—highly flexible, double compensated
- **IDEAL FOR 45° IDLERS**—guaranteed against separation at idler hinge line
- **OPERATES ON SMALLER PULLEYS**
- **IMPACT CUSHIONED**—resists ripping

ASK YOUR R/M DISTRIBUTOR ABOUT THE ADVANTAGES OF RAY-MAN FOR YOUR INSTALLATION.

Write for Bulletin M302.

R/M Poly-V® Drive Delivers More Power in Less Space ...With More Reliability

A single, endless V-ribbed belt across full width of sheaves with mating grooves. Gives more power per inch of width and advantages never possible with conventional multiple belt drives.

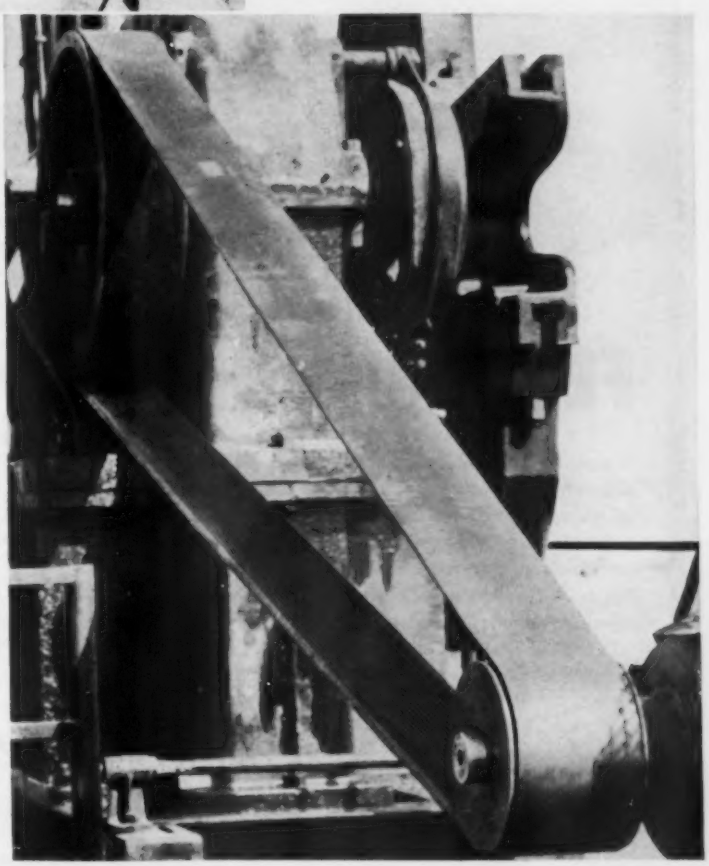
- **SIMPLICITY**—*two* belt cross sections meet *every* heavy duty requirement
- **RELIABILITY**—less maintenance, less take-ups . . . longer belt and sheave life
- **NO MATCHING**—single unit belt eliminates "length matching"
- **BETTER PERFORMANCE**—maintains groove shape, constant pitch and speed ratios . . . runs smoother, cooler

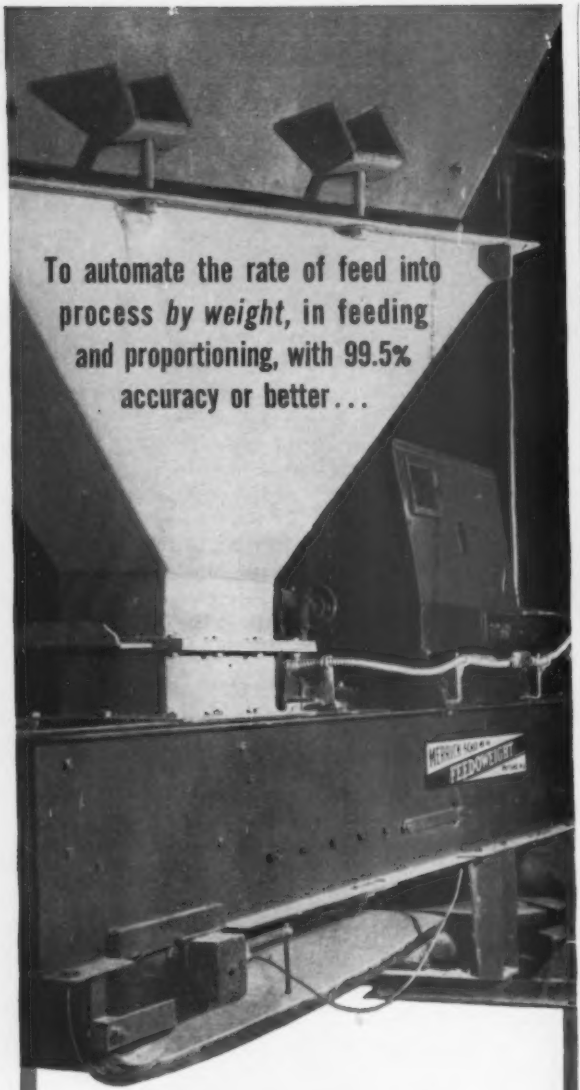
WHEN YOU CHANGE DRIVES CONVERT TO POLY-V* . . . AND BE SURE.

Write for Bulletin M141.

*patented

RM131





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FEEDOWEIGHT

Automates complete plant processes involving the accurate blending of materials and additives . . . records running total weight as it feeds . . . is available in models for all rates of feed up to many hundred tons per hour . . .

For bulletin and detailed information on the Merrick Feedoweight, write . . .

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more than fifty years of "firsts" in automatic weighing

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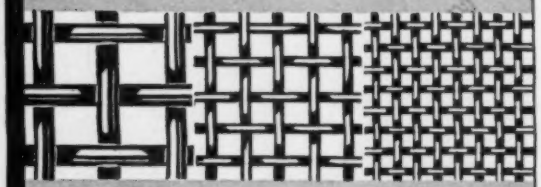
STRONG AS ARMOR

NAT-ALOY

Woven Wire Screens



Reliable Nat-Aloy woven wire cloth is specified throughout industry for maximum screening accuracy and economy. Available in flat surface, lock crimp, double crimp, rectangular and long slot openings. All sizes, meshes and gauges—prompt shipment.

WE OFFER NOW... SUPER NAT-ALOY
OIL TEMPERED WOVEN WIRE CLOTH
★ GREATER RESISTANCE TO ABRASION
★ MORE TONNAGE AT LOWER COST
★ FEWER COSTLY CHANGE OVERS

Write for information. Also stainless steel wire screens.

NATIONAL WIRE CLOTH COMPANY
252 W. Fairfield Ave., St. Paul 1, Minnesota

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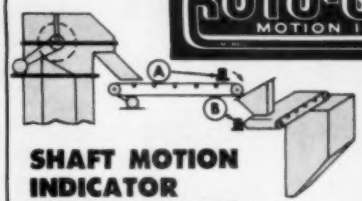
ROTO-GUARD
MOTION INDICATOR



SHAFT MOTION INDICATOR
PROTECTS MACHINERY BY INDICATING STOPPAGE DUE TO OVERLOADING OR MALFUNCTION

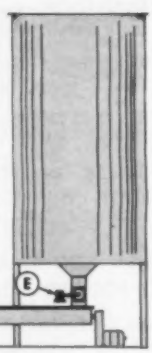
A and B: On end return idlers, warn if conveyor should break, slow or stop.

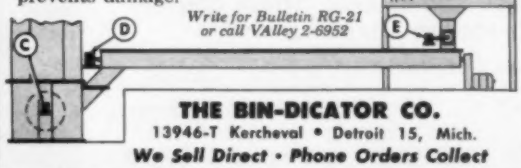
C: On boot pulley, signals slowdown, stoppage, slippage due to overload, boot pulley out of adjustment. Helps prevent fires.

D: On screw conveyor, warns of slowdown due to overloading. Prevents damage.

E: On rotary feeder, warns of slowdown; prevents plugging damage.

Roto-Guards can be wired into interlock system; stoppage of one component automatically stops others; prevents damage.





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We Sell Direct • Phone Orders Collect

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HENDRIX DRAGLINE BUCKETS

LESS BUCKET WEIGHT for greater capacity.

ALL WELDED CONSTRUCTION for greater strength and durability.

14% MANGANESE STEEL chains, fittings and reversible tooth points.

PERFECT PERFORMANCE - faster loading - easier handling - cleaner smoother dumping.

Type "LS"
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Type "HS"
} A Type and Size For Every Digging Purpose.

¼ to 40 Cubic Yards

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

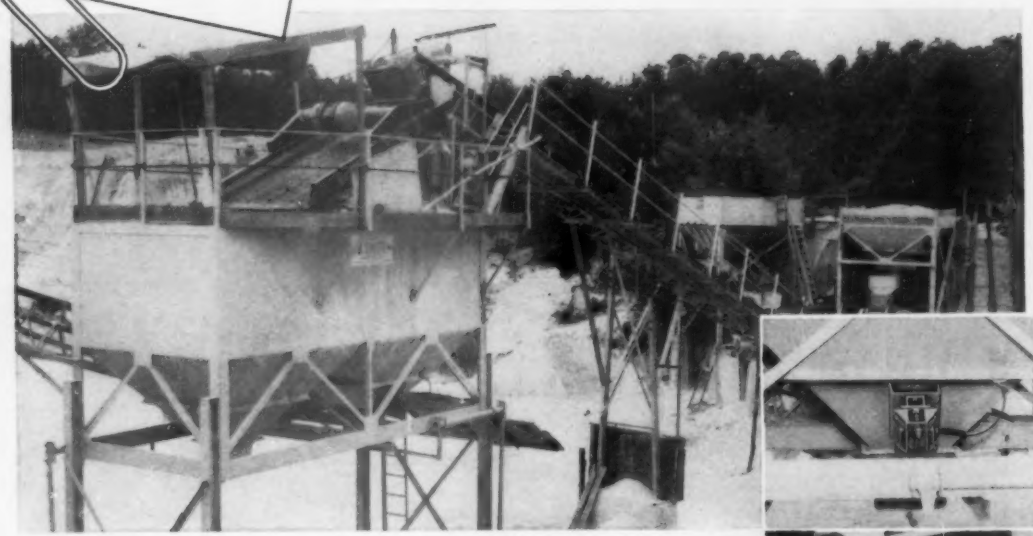
SYNTRON

CASE HISTORY

another successful application in the

No. 1443

SAND and GRAVEL INDUSTRY



C & L Goodhart — Masonry Sand Producers

get excellent results in every production phase with a

SYNTRON VIBRATOR, FEEDER, GRIZZLY, SCREEN

One of the finest masonry and producing plants in Central Pennsylvania is owned and operated by C & L Goodhart at Walnut Bottom, Pennsylvania. This plant was designed and built by L. B. Smith, Inc., Camp Hill, Pennsylvania and has been in operation since April, 1959.

This plant has an output of approximately 100 tons of high grade masonry sand per hour, with 60 tons produced by the primary crusher circuit and 30 to 40 tons from the secondary hammermill circuit. The process equipment that has helped this plant maintain high production standards and a quality product include—a Model RVS-1510 Rotary Vibrator Screen, a Model F-55DT Vibrating Grizzly, a Model F-33DT Vibratory Feeder, and a Model V-75 Electric Vibrator. All Syntron Equipment.

Syntron equipment has successfully aided C & L Goodhart with materials handling problems—it can do the same for you.

For detailed information write for a free Syntron Catalog today.

SYNTRON

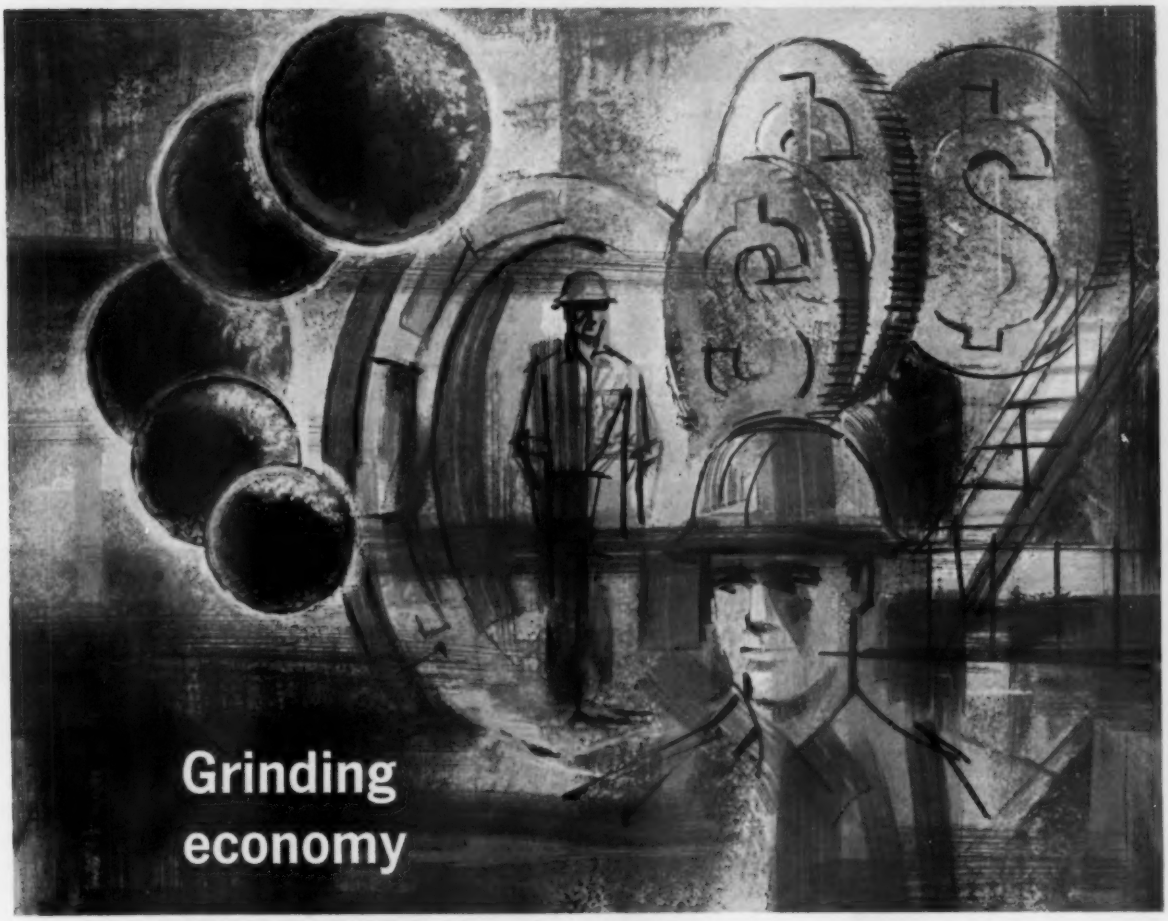
SYNTRON COMPANY

385 Carson Avenue • Homer City, Pa.

Strong
Tough
Economical
Efficient
Lasting

Steel

SHEFFIELD MOLY-COP Grinding Balls



has earned customer acceptance

Over a million tons of Sheffield Grinding Balls have proved that Moly-Cop quality will give you better grinding at lower cost. What's behind this fine performance? Hardness, toughness and uniformity. Hardness to fight wear. Toughness to resist spalling and breaking. And uniformity of fine grain structure right to the core. That's why Moly-Cops keep their spherical shape longer, require fewer chargings and less down time, and save you money in the long run. **Sheffield Plants: Houston, Kansas City, Tulsa.**

ARMCO Sheffield Division

PROPEX
175
175-2

FREE FLOWING NON-BRIDGING IN HOLES AS SMALL AS 1½" DIAMETER

12 HOLES FIRED AT A SAVINGS OF $97

"We had already drilled twelve 2½" holes, twelve feet deep. From the time your Propellex men arrived on the scene (we gave them some assistance in loading the holes), it was just 45 minutes until the shot was fired. At a cost in labor and materials of $45. With our old method, it would have taken two men four hours to have loaded and fired these holes at a cost of $142. One dramatic demonstration sold us!"
C. M. Lohr, Inc., Quarry—Godfrey, Illinois

HOLES FILLED IN ONE-HALF THE LOADING TIME

"Using Propex 175, we filled holes in about one-half the previous loading time without any bridging or tamping. We found we saved better than $1.00 per hole, *not* including savings in labor costs. Additional experience with your product has increased these savings. In the 45 years of our experience, this is the least cost per ton of any rock we have produced."
Paul C. Herter Quarry—Golden Eagle, Illinois

- High density Propex available in special waterproof packaging for water holes.

Let the man from Propellex help you reduce costs in YOUR mining operation . . . contact

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Phone: Osborne 5-0158 — Spring 2-1218 (L.A.)

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Kiln tires, such as shown above, up to 14'-0" x 27", are cast in 4 pieces at the Bethlehem Foundry and preassembled at the shop to assure accurate, economical reassembly in the field. Exceptionally accurate alignment is assured by the tongue and groove machining and the use of fitted pins in reamed holes at final assembly.

BETHLEHEM
FOUNDRY & MACHINE CO.
CEMENT MILL MACHINERY DIVISION
225 W. SECOND STREET, BETHLEHEM, PA.

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PLATEGRIP
PLATE FASTENERS FOR CONVEYOR BELTS

Make strong dust-tight, water-tight joints in belts of any width. Special design spreads tension uniformly across belt, allow natural troughing of belt and assures smooth operation over flat, crowned or take-up pulleys. Sizes for belts of from ¼" to 1½" thickness. *Write for Catalog Sheet.*

ARMSTRONG BRAY & CO.
5374 Northwest Highway, CHICAGO 30, U. S. A.

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DEPENDABLE
FOR 60 YEARS
Woven Wire
ALLOY
SCREENS
TWIN CITY IRON & WIRE CO.
St. Paul, Minnesota

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Even in the remotest mining areas, ruggedness and freedom from service problems are ***musts*** *for crushers*

■ That's why the BIRDSBORO-BUCHANAN trademark is a familiar sight to natives in mining operations of many countries throughout the world. Management in these remote areas must be extremely careful in their selection of important equipment. Recently added to the long list of foreign installations of BIRDSBORO-BUCHANAN Deep Frame Jaw Crushers is the patented 42″ x 48″ unit now turning out 400 tons per hour in the Hierre de Arcari Iron Ore Mine in Peru. This heavy duty crusher was specifically designed to provide continuous trouble-free service.

Your Birdsboro representative can give you the profit-producing details for your own operation. *Sales Department, Engineering Department and Mfg. Plant:* Birdsboro, Pa.
District Office: Pittsburgh, Pa.

Canadian Representative & Manufacturer: John Inglis Co., Ltd., Toronto, Canada.

World-Wide Agent Representation. Contact home office for nearest representative.

CR 29-60

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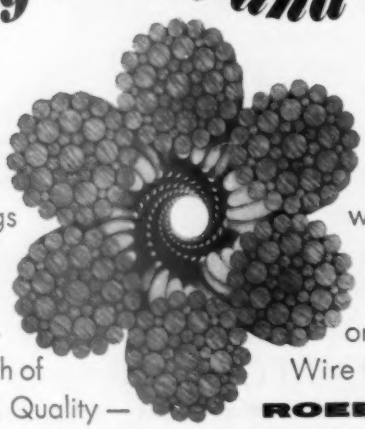
CORPORATION BIRDSBORO, PENNA.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • ROLLS • ELECTRIC STEEL CASTINGS: Carbon, Low Alloy and STAINLESS STEEL

We put a lot of work into it
You get a lot of work out of it

quality inside and outside



Take a good look at the pictures. They show you where your savings really start — with the inner and outer uniformity of wires and strands. Unseen, but of utmost importance is the *extra* high strength of Roebling Royal Blue Wire Rope. Quality — inside and outside — is the extra working factor that pays off on the job for *you*. Find out more from your wire rope distributor, or write for free booklet to Roebling's Wire Rope Division, Trenton 2, N. J.

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John A. Roebling's Sons Division
The Colorado Fuel and Iron Corp.

Arnold Abbrot, with over 20 years' experience with the Kaiser Company, supervises the Kaiser Radum plant, one of the industry's most modern and efficient. Plant handles a feed of 1200-1300 TPH rock, gravel and sand.

KAISER specified WEMCO for RADUM plant

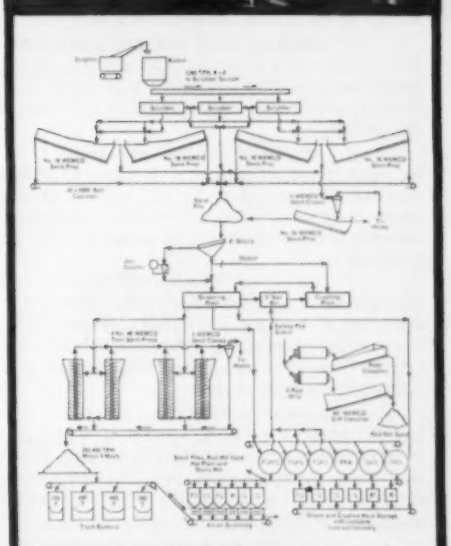
Maximum efficiency in equipment— and operation—pays dividends

Since it first began production in 1930, the Kaiser Radum Plant, in Pleasanton, California, has had a continuous record of successful operation. Capable management, a progressive program of modernization and expansion have made it one of the industry's largest—and most efficient.

Because of its record of outstanding, profitable performance in major aggregate plants, WEMCO equipment was selected for modernization of this 1200-1300 TPH sand and gravel plant. Four #78 WEMCO Sand-Preps receive material from scrubber section. Four #48 Sand-Preps wash and classify all #4 minus concrete sand (350-400 TPH). A #60 WEMCO Sand-Classifier (installed in 1952) handles rod mill discharge. Eight WEMCO Sand-Clones process Sand-Prep overflow water for recovery of fine sands.

High capacity trouble-free WEMCO equipment combined with Kaiser's advanced production, flexible handling and blending techniques, enable the Radum Plant to meet even the most recent specifications and the demands of a highly competitive market.

Another example of WEMCO and the Industry's forward-looking companies working together for the future. A WEMCO engineer can provide answers to your aggregate problems. Better quality . . . greater profits.



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a division of

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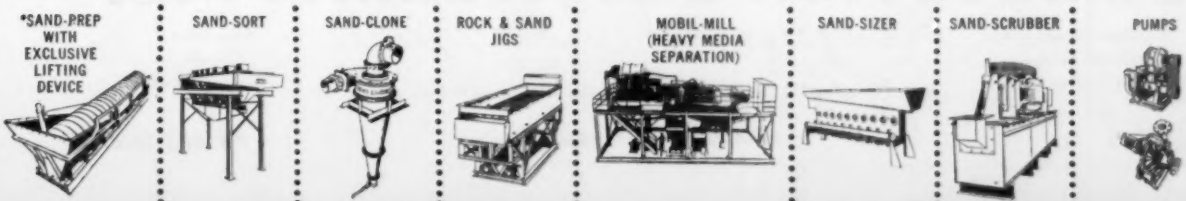
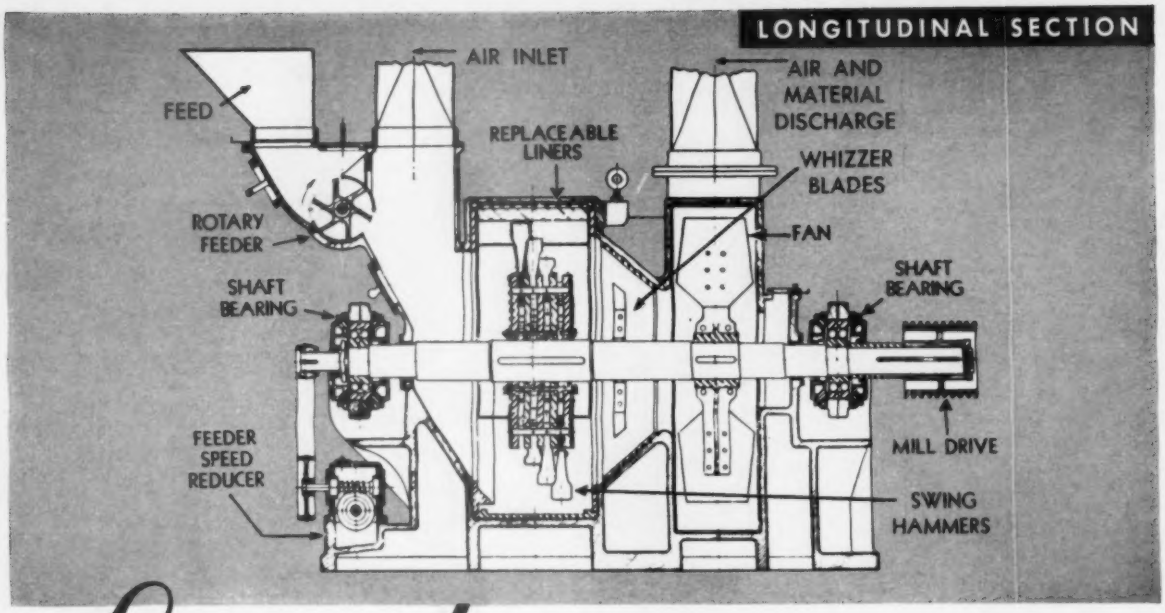




Raymond's RUGGED IMP MILL

THE MULTI-PURPOSE GRINDING UNIT

GRINDING • BLENDING • SEPARATING • CONVEYING • DRYING

⚹ DESIGNED FOR FINE GRINDING

The Imp Mill is particularly intended for medium fine and fine grinding of softer non-metallic minerals and many manufactured products. Wide usage of the Imp Mill is made in a great many fields where pulverizing is desired.

⚹ VERSATILITY OF APPLICATION

Mills are built in a variety of types and sizes to produce many different capacity requirements. They have a wide degree of adjustment of product fineness, ranging from about 20 mesh to 325 mesh, depending upon material handled.

⚹ NEED OF CLASSIFIER

For higher finenesses or more uniform finished products than the Imp Mill would normally produce, an air classifier may be used. Either an integral Whizzer Separator or a Raymond Mechanical Air Separator could be installed according to the particular type of operation needed and the material to be processed.

⚹ FLASH DRYING

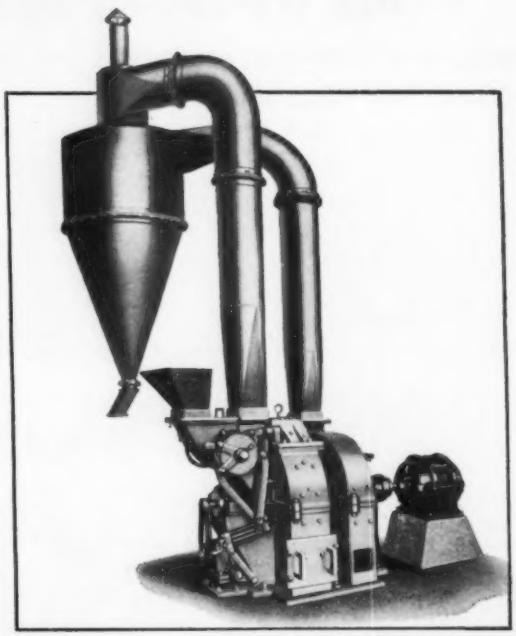
The basic design of the Imp Mill readily adapts itself to the simultaneous drying and pulverizing of materials. The Mill utilizes heated air or products of combustion for removing surface moisture and, in special cases, chemically combined water from materials during grinding. In all instances air is used as the conveying medium.

⚹ FLEXIBLE IN INSTALLATION

Each Mill System is a compact installation, engineered to fit most any plan or layout. The floor space is held to minimum requirements of Mill and Drive Motor. Piping variations permit cyclone collector, within limits, to discharge material where needed. Systems are completely enclosed from feed hopper to finish bin.

⚹ DUSTLESS OPERATION

The excess air is diverted to a secondary collector or, where permissible, can be exhausted to the atmosphere.



FOR FURTHER DETAILS ON THIS AUTOMATIC UNIT WRITE FOR RAYMOND IMP MILL CATALOG NUMBER 87 ♀

COMBUSTION ENGINEERING, INC.

Raymond Division

Combustion Engineering-Superheater Ltd.
Montreal, Quebec, Canada

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Re-Usable Armco Corrugated Steel Structures Are Sturdy, Economical

Sturdy—Conveyor tunnels made of Armco MULTI-PLATE® or Liner Plate easily withstand the tremendous weight of aggregate piles. They gain their strength from material properly compacted around them. They won't crack or break.

Economical—With either Liner Plate or MULTI-PLATE your own crews can quickly bolt the plates together. The structural bolts make ideal utility line hangers. Hoppers are easy to install. And you can relocate any Armco Structure . . . many times over.

For complete information on the economy of Armco Corrugated Metal Structures, just fill in and mail the coupon. An Armco Sales Engineer will provide it with no cost or obligation to you.

Steel

For rugged, economical service

ARMCO **Drainage & Metal Products**

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Ranomatic A, BX, C and D

ARE TUBULAR TYPE COILED WIRES FOR

HARD SURFACING

BY THE AUTOMATIC OR SEMI-AUTOMATIC PROCESSES

COMPOSITIONS OF DEPOSITS MADE BY THEM ARE COMPARABLE TO THOSE MADE FROM THE TIME-TESTED

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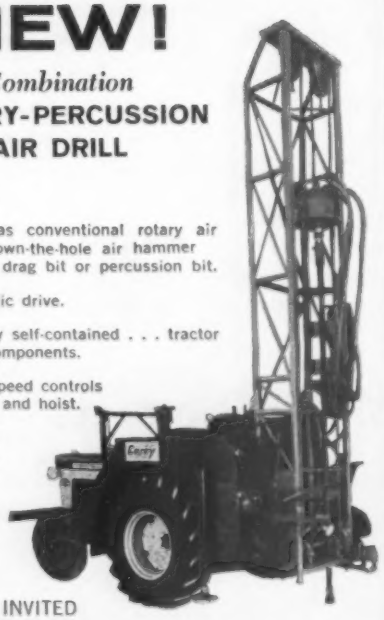
Combination

ROTARY-PERCUSSION AIR DRILL

Features:

1. Operates as conventional rotary air drill or as down-the-hole air hammer that can run drag bit or percussion bit.
2. All-hydraulic drive.
3. Completely self-contained . . . tractor engine, all components.
4. Variable speed controls on pull-down and hoist.
5. Hole size 2½" to 4½".



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Carey MACHINE & SUPPLY INC.

P. O. Box 63 Houston 1, Texas

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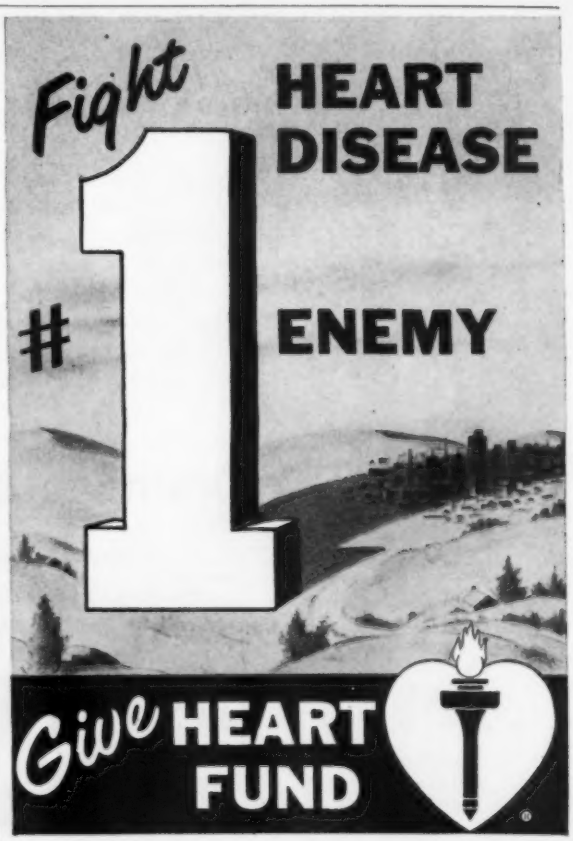
Fight HEART DISEASE



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MULTIWALL BAGS OUT-PERFORM CONVENTIONAL KRAFT IN THE 3 TOUGHEST TESTS IN PACKAGING TODAY!

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CLUPAK extensible paper multiwalls withstand rough shifting of filled bags in box cars and other in-transit handling. This remarkable paper absorbs strain and impact that cause conventional kraft bags to rip, split or tear . . . often enables multiwall users to increase package strength yet decrease the number of plys, with resulting savings. Test this new toughness–request a trial shipment of multiwalls made of CLUPAK extensible paper.

2 In The Warehouse!

Stack them high! Multiwalls made of CLUPAK extensible paper hold greater loads, take greater strains, stack compactly and safely even with lower basis weight paper. The stretch and "give" built into CLUPAK extensible paper withstands punishment that often rips, splits and tears conventional kraft. Bags with the trademark CLUPAK warehouse faster – without "kid glove" treatment.

3 On The Filling Line!

Are you having a problem on your automatic filling machines due to conventional kraft multiwalls being too stiff–tearing–splitting? Multiwalls made of CLUPAK extensible paper will solve the problem. Their remarkable flexibility permits fast, uniform filling; their high energy absorption reduces breakage, cuts waste and repackaging costs. Say CLUPAK before you say paper and see how it outperforms your present packaging material.

Prior to CLUPAK extensible paper, there were no controlled standards of toughness in the paper industry. Clupak, Inc., is proud to have established these standards and permits the use of its trademark only on paper which meets these rigid toughness requirements.

EXTENSIBLE CLUPAK® PAPER

Ask your salesman about this revolutionary new material... prove to yourself that multiwall bags made of CLUPAK extensible paper give you...

GREATER STRENGTH WITH LOWER TOTAL BASIS WEIGHT

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications. Clupak, Inc., 530 5th Ave., N. Y. 36, N. Y.

Profitable Production HERE

Feather Construction Co., of Morgantown, West Virginia, power their Cedarapids Commander Plant with a 203 HP (continuous) Murphy Diesel to assure delivering more power into the job.

demands MORE POWER DELIVERED INTO THE JOB with a MURPHY MP DIESEL

Take a look at the amount of aggregate coming off this delivery conveyor. That is profitable production! It goes on like this hour after hour, day after day, because all the power from the engine is put *into* the job . . . usable power that's delivered where it counts for maintaining high daily tonnages.

MP Series Murphy Diesel engines are designed and built to react to load changes immediately, with the high rising torque that delivers More Power *into* the job when needed. Murphy Diesels have the ability to take hold of a load and really hang on, to help keep your plant at the right operating speed under the toughest crushing conditions.

Power that's merely *on* the job can't increase your plant's productivity. It's the *total usable power* delivered *into* the job each day which determines that day's production, and profit. Be sure you are getting maximum output from your plant . . . put Murphy MP Power in your job today. Your Murphy Diesel Dealer has full details about Murphy's new MP Concept of Power.

435-RO

MURPHY DIESEL

Here's the MP Series line-up for construction

MP SERIES ENGINES AND POWER UNITS —105 HP to 320 HP, 1200 and 1400 RPM

MP SERIES GENERATOR SETS—60 KW to 227 KW

MP SERIES MECH-ELEC UNITS for delivering mechanical or electrical power separately or simultaneously

MP SERIES DUAL FUEL ENGINES—147 to 227 HP

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Section

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Leading manufacturer of crushing cement and lime plant machinery requires service and erection representative. In reply give education, experience and salary required. All communications confidential.

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431 So. Dearborn St. Chicago 5, Illinois

WANTED

General Foreman with Asst. Supt. potentials wanted by Midwest sand plant. Year around operation. Give complete history, education, practical experience in operation and maintenance of heavy equipment, screening, electric motors, welding, age, marital status, salary expected. Replies treated in strict confidence. Write

Box No. PQ-114-B, c/o Pit and Quarry Publications
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Qualified agents or dealers to sell modern line of washing and classification equipment to aggregate producers—Exclusive franchised territories available—Liberal return on a modest investment—Write, stating previous experience and desired territory, to

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THOMASVILLE DRILLING & TESTING CO.
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PRODUCT DESIGNER

Prominent Midwest manufacturer has challenging opening for a Mechanical Engineer with product design experience in the field of GYRATORY CRUSHERS, GRINDING MILLS, ROTARY KILNS, and other related PROCESS MACHINERY for the ore and cement industries.

Prefer graduate engineer but will consider other technical training and practical experience in lieu of degree.

Excellent opportunity for professional growth and personal achievement. Send detailed resume including salary requirement to Employment Manager.

Box No. PQ-118-C, c/o Pit and Quarry Publications
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CAREER-OPPORTUNITY for MECHANICAL ENGINEER in NEW ALUMINA PLANT

Harvey Aluminum, a dynamic, fast growing producer of primary aluminum and mill products is engineering a new alumina plant.

The following challenging position is now open:

Senior mechanical engineer, minimum 4 years plant experience in the maintenance department of a Bayer ore process or alternately, minimum 6 years plant experience in the maintenance department of other extractive metallurgical or chemical processes.

Candidates having experience with the operation of boilerhouses will enjoy preference.

This permanent position offers excellent career opportunity with a strong growth company.

Send complete resume of education and experience to:

HARVEY ALUMINUM
(Incorporated)
Attention: MR. RON HOWARD
Director of Professional Personnel
19200 South Western Avenue
Torrance, California

WANTED

CRUSHING PLANT EQUIPMENT

L. B. SMITH INC.
CAMP HILL, PENNA.

CRUSHERS, JAW: One Allis Chalmers 40 x 42" with 150 H.P. V-belt drive motor and controls, with or without heavy duty Apron Feeder 42" x 14'3" with motor, reducer and drive, condition guaranteed. One Allis Chalmers 24 x 36" and one 18 x 30". One Traylor 15 x 24". Other crushers 8 x 10 to 48 x 60".

CRUSHERS, GYRATORY: One Telsmith 16-B.

CRUSHERS, ROLL: Allis Chalmers 24" x 14", new unused, with two 7½ H.P., 220/440 volt motors, unused. One 24 x 54" Pioneer with motor and drive.

DRYERS: One 5' x 25' and one 3' x 33'.

CLASSIFIERS: Two Wemco and Akins type SH, 48" x 26'3" and two 48" x 20'3". One Wemco Densifier type SH, 36" x 18', complete with drive and lift motors.

BELT CONVEYOR: 36" x 650 ft. complete.

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General Superintendent or Manager desires position —25 years experience large and small quarries. Excellent safety and production record. Redi-Mix and black-top experience. Resume on request. References.

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20 x 30 C.R. Portable Primary
18 x 30 Lippman Complete Plant Portable
TD-18A with 3 yd. Drott loader

This equipment is in excellent shape and is priced right.

Financing available.

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5 — 2 YD. DUMP CARS

5 Easton V-Shape, 36 in. ga. steel 2-way side dump cars.
$145. each, Branford, Conn.
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Symons 2-ft. Std. Head Cone Crusher. New in '58. Excellent condition. $7500.

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8' Raymond Mechanical Air Separator, Dbl. Whizzer
20"x36" Portable Primary Crushing Plant—complete
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CONCRETE TRUCK MIXERS

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Must have minimum of 5 years machinery sales experience in mining, crushed stone, sand and gravel or cement industries.

Prefer graduate engineer but will consider technical background and experience in Mechanical, Metallurgical, or Mining Engineering in lieu of degree.

Position requires about 75% traveling, contacting customers and prospects for application and sale of crushers, grinding mills, rotary dryers, kilns, coolers, etc. used for the processing of ores and minerals. Straight salary, expense account and car furnished.

Write stating age, education, experience and salary requirements. Replies strictly confidential.

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Priced For Quick Disposal

3 Allis Chalmers (2 compartment) 7'x22' Compeb Mills with Meehanite liners; each directly coupled to 400 H.P. motor.

1 Allis Chalmers 9'6" Continuous Ball Mill; or PRELIMINATOR with Meehanite liner; directly coupled to 400 H.P. motor.

3 Allis Chalmers 7'x22' Continuous Tube Mills; with three 14' Raymond Double Whizzer Air Classifiers; each mill directly coupled to a 400 H.P. 3/60/2200 V 180 RPM motor.

3 Raymond 14' Mechanical Air Separators with Double Whizzer. New in 1950. Each Separator V-Belted to a 75 H.P. motor.

All Mills and Classifiers were operated in CLOSED CIRCUIT.

Also available are Steel Enclosed Bucket Elevators and Screw Conveyors.

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OUR CEMENT AND PYRO-PROCESSING DIVISION is complementing its staff and we are able to offer some unusually interesting opportunities to outstanding men in:

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We are seeking graduate engineers presently occupying responsible positions, with extensive practical experience and a proven record of achievement including the latest developments in the cement industry. Forceful young personalities with practical experience, not only in plant design, but also in start-up, operation and maintenance are highly preferred. Know-how in related fields such as light weight aggregates, lime, etc., and a knowledge of foreign languages is desirable.

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Experienced in economic evaluation, design and engineering of complete kiln departments including detailed calculations for sizing of all equipment including kilns, coolers, preheaters, fans, precipitators, bag houses, etc. Experience in layout of kiln control systems desired.

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Thoroughly experienced in all cement processes, raw material evaluation, planning of laboratories, all phases of laboratory work and quality control. Familiar with automatic sampling, X-ray analysers, computer control of raw mix, etc.

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Preferably a graduate electrical engineer, fully familiar with latest development of cement plant controls and automation; including television, radiation absorption type instruments, sonic and master-slave mill feed controls, S-ray analysers, and computer applications.

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Fully familiar with all material handling problems. Experienced in economic evaluation, design and engineering of all related processes as in calculations and sizing of all equipment involved.

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Extensive experience in start-up and operation of various types of kilns in several plants. Accustomed to working with and without extensive instruments and controls. Trained to push kiln outputs while maintaining product quality and increased efficiency. Proven record in training kiln operators. Bachelor preferred.

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Assignments will be in our modern, New York headquarters, near Grand Central Station, and will afford excellent, stable opportunities for professional development and advancement. Progressive insurance, pension plans, and other employee benefits. Your inquiry is invited and will be held strictly confidential.

Please write stating details of background and salary requirements to
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KELLOGG

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ROTARY KILNS, DRYERS, COOLERS

1—Allis Chalmers 9' x 130' Rotary Kiln ¾" shell.
1—Allis Chalmers 7' x 120' Rotary Kiln, ⅜" welded shell.
2—Allis Chalmers 7'6" x 7' x 125' Rotary Kilns.
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1—Louisville 6' x 48' Rotary Dryer, ⅜" shell, oil fired.
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3—Davis 6' x 25' Rotary Dryers ½" shell.
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1—Raymond #5057 Five Roll High Side Mill, 7' double whizzer separator.
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1—16' dia. Raymond Whizzer separator with 50 H.P. motor.
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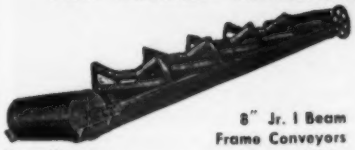
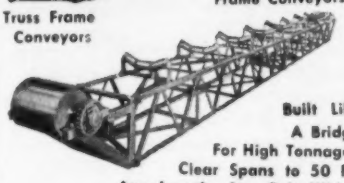


8" Jr. I Beam Frame Conveyors

Truss Frame Conveyors



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Belt Width	Conveyor Length	I-Beam Frame Price	Truss Frame Price
14"	25'	$ 766	$ 985
14"	50'	1181	1510
14"	85'	1763	2273
16"	20'	700	875
16"	45'	1128	1434
16"	60'	1384	1770
16"	90'	1897	2442
18"	25'	930	1104
18"	45'	1190	1573
18"	70'	1641	2159
18"	100'	2182	2862
18"	130'	2723	3565
20"	25'	871	1170
20"	60'	1546	2016
20"	75'	1836	2388
20"	90'	2125	2760
24"	25'	922	1200
24"	45'	1335	1723
24"	70'	1852	2377
24"	100'	2473	3160
24"	120'	2886	3683
30"	50'	1591	2018
30"	70'	2054	2594
30"	90'	2518	3170
30"	100'	2749	3459
36"	25'	1105	1393
36"	45'	1623	2024
36"	60'	2012	2497
36"	100'	3048	3758

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- HIGH TONNAGE AT LOW COST
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TYPE C

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Width	Ply	U.S. Made Per Foot
14"	4	$3.06
16"	4	3.21
18"	4	3.56
20"	4	4.11
24"	4	4.61
30"	4	5.64
36"	4	6.89

MAJOR BEE BRAND: 16# to 19# Friction Pull. 2400# to 3000# Cover Tensile. Skim Coat Between Plies. A high grade of heavy duty 28 oz. duck, 1/8" top x 1/32" bottom rubber covers. For severe service and abrasion resistance. For stone, mineral ores, concrete, cement and coal.

Width	Ply	U.S. Made Belt Per Foot	Special Imported Belt Per Foot
16"	4	$3.74	$3.23
18"	4	4.14	3.58
20"	4	4.72	4.15
24"	4	5.35	4.67
30"	4	6.56	5.75
24"	5	6.25	5.41

WRITE US FOR YOUR ELEVATOR BELT AND CHUTE LINING REQUIREMENTS

ELEVATOR BELT is of heavy duck carcass with smooth tough rubber or friction surface on one or both sides. Can be furnished with or without bucket holes punched and cemented. Write for full information and prices.
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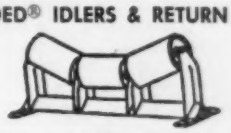

3-roll, 5" diameter Troughing Idlers for:			
14" belt	$19.75	24" belt	$22.75
16" belt	20.50	30" belt	23.85
18" belt	21.90	36" belt	24.90
20" belt	22.10	48" belt	27.50
1-roll, 5" diameter Return Rolls for:			
14" belt	$ 8.50	24" belt	$11.00
16" belt	9.00	30" belt	12.50
18" belt	9.50	36" belt	13.75
20" belt	10.00	48" belt	18.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable pre-lubricated sealed ball bearings. Maintenance is negligible. WRITE FOR BULLETIN #1138.

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4-5 HP & 10 HP Vert. Elec.

500 RR GONDOLA CARS
50 Ton Open Top & 70 Ton Covered

ELECTRIC AIR COMPRESSORS
9—Ingersol-Rand, 3000', 2200', 1300' — 690'
3600' Joy 600 HP New 1958

DIESEL LOCO CRANE
25-ton Industrial Brownhoist with D13000 Cat. diesel & 60 ft. boom

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9—8, 12, 15 & 30-ton Plymouth

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300—1½, 3, 5, 16 & 20 yds. cap.
22—30 yd. Clark Air Dump

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8" x 10", 10" x 36", 20" x 36", 24" x 36"

JAW CRUSHERS BLAKE TYPE
12" x 26", 14" x 28", 18" x 36", 30" x 36", 48" x 60", 48" x 72", 66" x 84"

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40" x 16", 54" x 24"
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2', 3', 4', 5½, 7 Symons Cone Crushers
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48" & 20" Traylor with motors
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6' x 4' CIW, 6' x 9' Traylor, 5' x 5' Allis Chalmers

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3' x 8", 3' x 24", 5' x 22" and 10' x 48"

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HMH-04-NO Hammermills Inc. Non-Clog
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Jeffrey Traylor #4 Vibrating Feeder, with controller.
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30" & 36" Belt—New—Short Lengths.
Used 30" and 36" Belt.

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8'x60'x½" Welded Rotary Kiln
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4'x35' Rotary Dryer. New Shell
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3'x3'x12' Horiz.; 4'x9'x12' Vert. Pluggers
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8'8"x70' Ruggles Cole Dryer
8'x11' Traylor Ball Mill, Steel Lined
7'x24' Allis Chalmers Tube Mill
#5060 Dixie Mogul Hammermill
5x13 Penna Hammermills, 400 HP
Heil Patterson Crusher, 100 HP
Raymond #50 & #40 Impact Mills
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20"x40"; 30"x96"; 40"x84" Screens
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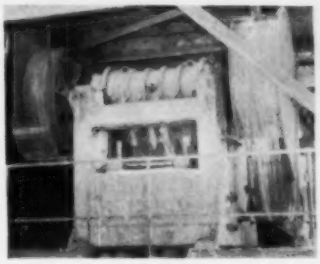

30" x 42" Pioneer Jaw Crusher

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2—30"x42" Pioneer Roller Bearing Jaw Crusher. All welded steel frame. Manganese jaws, V-belt drive, 125 hp. Elliot TEFC motors. 440 V. Complete with Clark combination starter. Excellent Condition.

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2½ cu. yd. Bucket
$6,000.00
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Bethlehem Wire Rope in the Adirondacks. You're looking at a huge quarry in upstate New York. The hoist rope on the loading shovels is Bethlehem 1¼-in. Form-Set Purple Strand, Lang Lay, with IWRC. Many of the other loading shovels at this operation are rigged with hard-working Bethlehem Rope. Heavy-duty service like this is the best way to appreciate the dependable performance that only a top-quality rope can deliver.

There's a distributor of Bethlehem Rope near you, supplied by our nationwide network of wire rope mill depots

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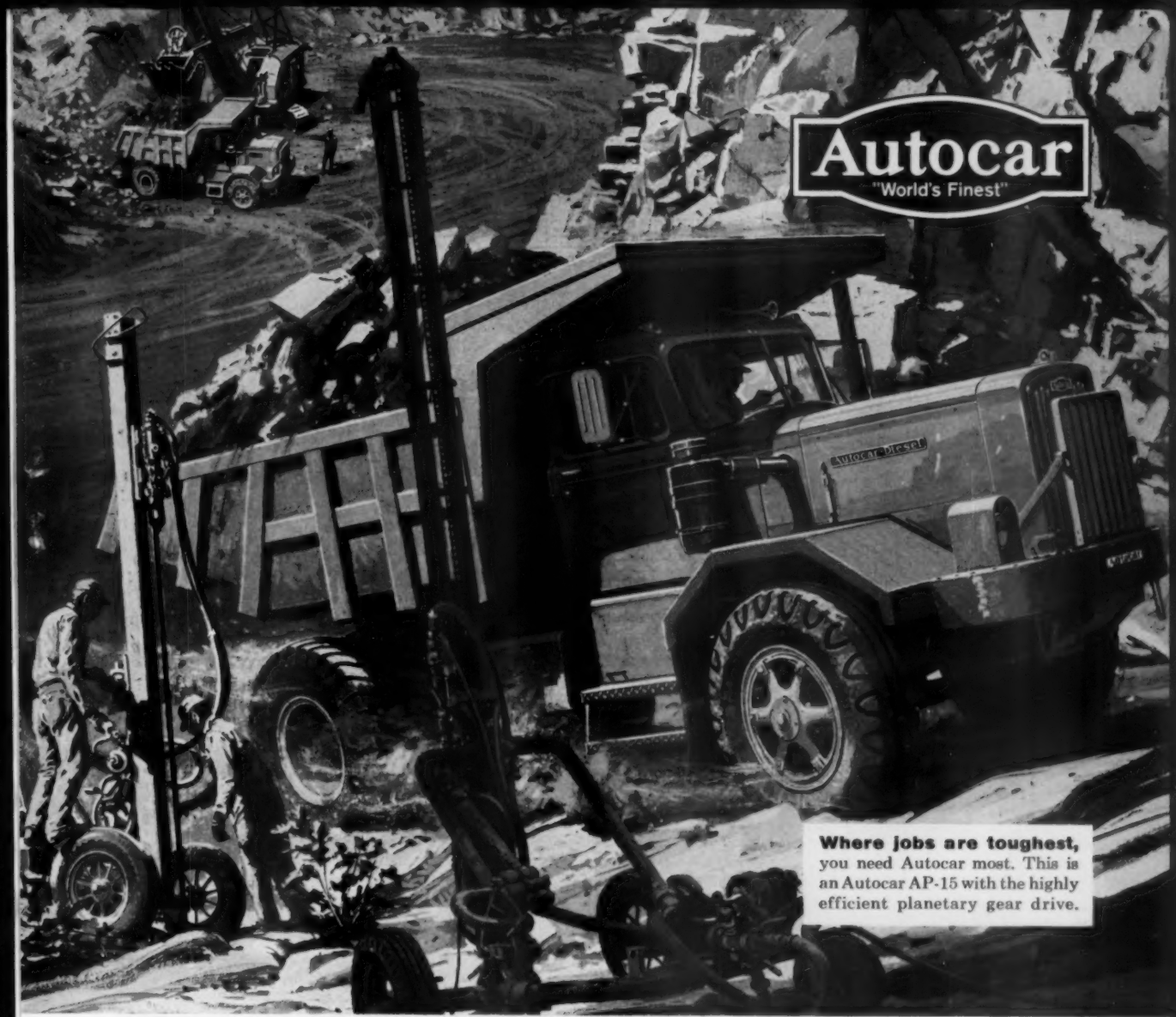

Where jobs are toughest, you need Autocar most. This is an Autocar AP-15 with the highly efficient planetary gear drive.

"Heavy hauling's for Autocar . . . not a substitute"

Need a truck that's versatile, tough under punishment, ready to do any kind of heavy job in any kind of weather? That's the kind of work for an Autocar AP-15.

This Autocar is at home on slippery shale rock; in deep, rutted mud; up grades that look impossible. That's because—with its planetary rear axle—the power is applied with greater gear reduction directly to the rim of the wheel.

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Each Autocar is custom-engineered to order. Operators agree, Autocar is the "World's Finest." Why try to get along with less? White-Autocar comprehensive service throughout the United States.

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New Joy TDM-B1 swing boom trac-drill has complete power positioning and automatic hose reel

The new Joy TDM-B1 Trac-Drill with swing boom features full range power positioning of the drill. In swinging to any drilling angle from vertical to horizontal, there are no manual adjustments. The exclusive new hose reel trains air hose in all drilling positions, eliminating fouling—saving frayed hose and tempers.

Another exclusive feature, a new control arm swings the drilling controls with the boom. It puts the operator up front, where visibility for spotting is best, and then can be moved to any desired position—operation is independent of the boom.

The TDM-B1 carries Joy's dependable 450-DR Dual Rotation Drill. This drill provides hammer-free rotation for fast steel changes, plus a strong assist to normal rifle-bar rotation when needed.

The Joy TDM carrier is the most versatile machine in its class, and now offers you the option of either the new Swing Boom model, or the universal U-Bar machine. For complete information on the Joy TDM Trac-Drill, see your Joy distributor or write for Bulletin 2671-26.

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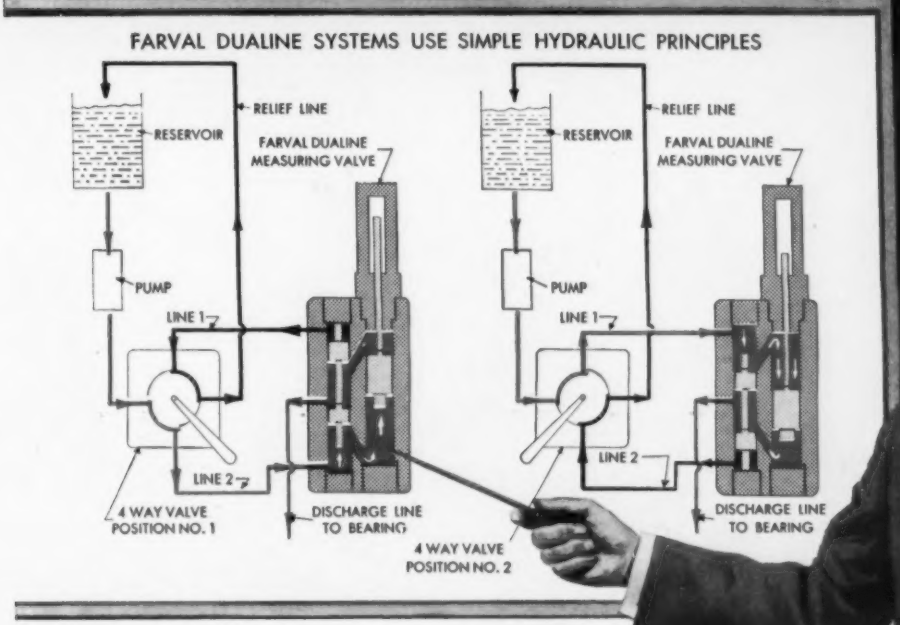
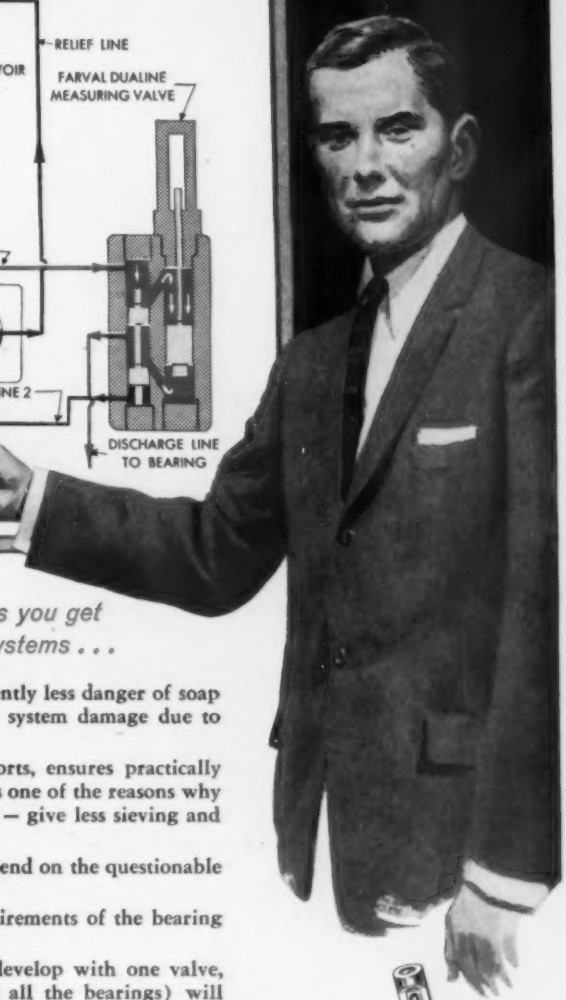
FARVAL
—Studies in Centralized Lubrication

No. 246

"For positive lubrication of large, medium and heavy-duty installations . . . it's a Farval Dualine System!"





With Farval Dualine centralized lubricating systems you get the following distinct advantages over other type systems . . .

(a) Much lower operating pressures with consequently less danger of soap separation on grease systems. Also, less danger of system damage due to high lubricant pressures.

(b) Large lubricant passages with no pinhole ports, ensures practically full pump pressure for every metering valve. This is one of the reasons why Farval Dualine systems operate on lower pressures — give less sieving and working of lubricants.

(c) Positive indication at each bearing — does not have to depend on the questionable action of a single indicator at the pump.

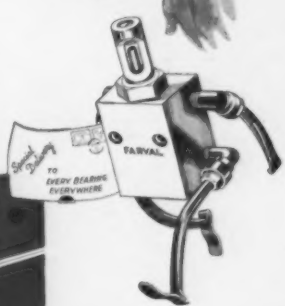
(d) Each metering valve individually adjustable for the requirements of the bearing it serves.

(e) Independent metering valve operation. Should trouble develop with one valve, the system will continue to operate. Only one bearing (not all the bearings) will require hand lubrication until trouble is corrected.

(f) True lubricant metering. Quantity of lubricant delivered to one bearing is not dependent on any other valve in the system.

(g) Much easier to spot and correct trouble.

Check with your Farval Representative and see how these versatile systems can improve production operations — reduce costs. Or write for free Bulletin 26-T containing complete engineering information on Farval Dualine systems.



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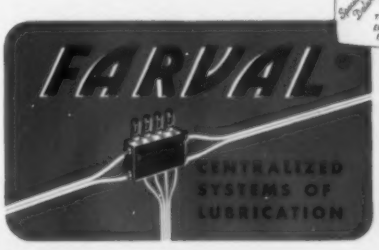

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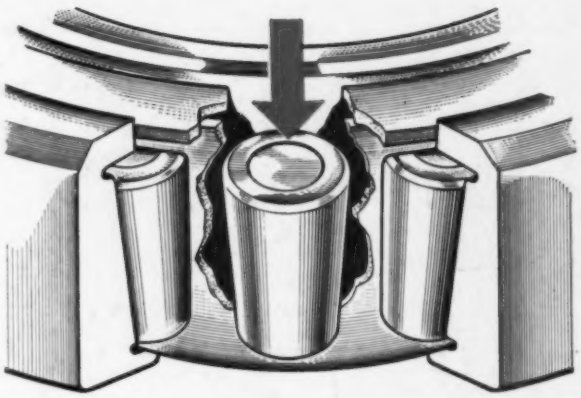
LUBE LOGIC

Three ways to chop downtime

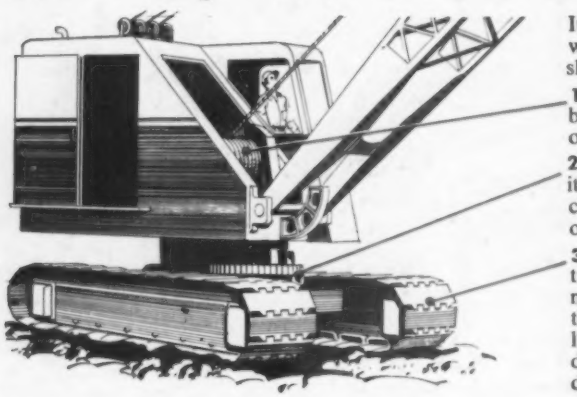
Change the differential lube, save the bearings

It's vitally important, on new trucks, to change the differential lubricant promptly at the mileage recommended by the manufacturer. By that time, the factory-installed lubricant may be highly abrasive, because it picks up minute particles of metal worn off the gears during break-in. If you don't change the lubricant you'll get very rapid wear of differential gears and bearings.

One of the most likely spots for this wear to show up is on the raised shoulder at the ends of antifriction bearing rollers. You'll know it's worn if, upon inspection, you find that the recessed area in the center of the roller ends has disappeared. If roll-end wear persists long enough without correction, pinion and ring gears get noisy. When it comes to that, your only option is to replace the bearing. Moral: whatever you do, don't stretch lube intervals, especially on new vehicles.



Some important don'ts on power shovel lubrication



It's an old Texaco maxim that over-lubrication is sometimes worse than none at all, and there are three vital spots on power shovels where this is particularly true:

1. **WIRE ROPE** that winds onto drums fitted with clutches should be lubricated very sparingly. Otherwise the lubricant may get onto the clutch faces and cause slipping.
2. **TURNTABLE ROLLER PATH** should never be lubricated, unless it's the double-flange type with hook rollers. Lubricant will cause the rollers to slide and wear flat. Lubricate the bearings of turntable rollers sparingly to avoid drip on the turntable path.
3. **TREADS** should never be lubricated. (We're talking about the tread only now; the track rollers or idling assemblers usually need frequent lubrication to keep them free of grit.) The links that connect the individual treads are designed to operate without lubrication. Any oil or grease on these pins will pick up abrasive dirt, which would act as a lapping compound on the pins, and drastically shorten service life.

No-sweat way to adjust crawler treads

Crawler treads are easier to adjust if you dab a little Texaco Threadtex on the adjusting screws. The Threadtex stays put through months of tough service, keeps the screws free-turning and corrosion-proof.

TEXACO LUBRICATION ENGINEERS

If LUBE LOGIC doesn't solve your problems, call your local Texaco man. Anytime, all the time, he's your best source of money-saving lubrication ideas. Don't forget that "lubrication is a major factor in cost control."
Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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